

LELI 3504  
Patent

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Ling et al.  
Application No.: 10/759,413  
Filed: January 16, 2004  
Confirmation No: 7491  
Title: Padlock  
Examiner: S. Barrett

Group No.: 3676

Assistant Commissioner for Patents  
Washington, D.C. 20231

STATEMENT OF ACCURACY OF TRANSLATION  
OF PRIORITY DOCUMENT (37 C.F.R. § 1.55(a))

I, the below named translator, hereby state:

My name and post office address are as stated below;

That I am knowledgeable in the English language, and in the language of the Republic of China (Taiwan) patent application (App. No. 092208756) filed on May 14, 2003, from which priority is claimed for this application.

\* A copy of the priority document is attached.

\* I state under penalty of perjury under the laws of the United States of America that the foregoing statement and the attached translation of the priority document that I have prepared are correct and accurate.

Executed on Date: June 16, 2005  
Full name of the translator Su, Allen Hui-Long  
Signature of the translator Allen Su  
Post Office Address 10th Floor, 201 Tun Hua N. Road  
Taipei 105, Taiwan, R.O.C.



## **TITLE OF THE INVENTION**

### **PADLOCK**

## **BACKGROUND OF THE INVENTION**

### **1. Field of the Invention**

5           The present invention generally relates to a padlock, particularly to a dual-operational padlock which can be operated by either a key or a combination.

### **2. Description of the Related Art**

10           A padlock is a well known product and is applicable to a variety of articles which may be under an obvious or potential safety risk, to prevent them from being opened. For example, to prevent an unintended user from opening a luggage, a padlock can be used to lock the overlapped pull tabs of the zipper of the luggage such that the zipper cannot be separated.

15           Generally, based on the locking mechanism utilized, conventional padlocks can be divided into two groups, key-operated padlocks and combination-operated padlocks. These two groups of padlocks have their respective advantages: namely, the key-operated padlock avoids the risk that a combination is forgotten; and the combination-operated padlock  
20           does not need a key and thus avoids the risk of losing it.

          Yang's US Patent No. 6,539,761, discloses a padlock combining the functions of a key padlock and a combination padlock. A user thus is able to use either a key or a combination to unlock the padlock. In this case, both locking operations are performed to lock a shackle, and both  
25           ends of the shackle are extended into a casing of the padlock and restricted therein. Accordingly, when the padlock is in a locked state, the article hooked by the shackle and restricted by the casing and the shackle cannot be taken off; and when the padlock is in an unlocked state, the shackle axially moves with respect to the casing, and one end of the  
30           shackle separates from the casing to form an opening to release the

hooked article.

According to the disclosure of US Patent No. 6,539,761 as well as the related prior art, to lock the shackle, the shackle generally has a notch formed thereon for engaging with the locking mechanism associated with the shackle; that is, the notch plays a key role in letting the locking mechanism lock the shackle. The disadvantages resulted therefrom are that the forming of the notch on the shackle needs more machining processes and decreases the structure strength of the shackle.

### **BRIEF SUMMARY OF THE INVENTION**

A main objective of the present invention is to provide a padlock which can lock the shackle without the requirement of a notch.

To achieve the above objective, the padlock in accordance with the present invention comprises: a casing; a shackle being pivotally connected to the casing; a latching tube received and operative to be moved within the casing; and a stop member driven by the latching tube so as to be moved between a first position where the first end of the shackle can be rotated by using the second end thereof as a center of rotation, and a second position where the stop member prevents the first end of the shackle from moving, and the shackle and the casing co-define a closed loop.

The present invention in accordance to the above can be further utilized in padlocks in the market, making the padlock a dual lock mechanism. In other words, the casing further comprises a lock mechanism for locking the shackle and restricting movement of the shackle.

Other and further features, advantages and benefits of the invention will become apparent in the following description taken in conjunction with the following drawings. It is to be understood that the foregoing general description and following detailed description are exemplary and explanatory but are not to be restrictive of the invention.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

The objectives, spirits and advantages of the preferred embodiments of the present invention will be readily understood by persons skilled in the art from the accompanying drawings and detailed descriptions, wherein:

Fig. 1 is a perspective view of a padlock in accordance with a first preferred embodiment of the present invention;

Fig. 2 is a partially exploded view of the padlock in accordance with the first preferred embodiment of the present invention;

Fig. 3A to Fig. 3B are schematic views showing the operations of the latching tube shown in Fig. 1 by inserting a key thereinto;

Fig. 4 and Fig. 5 are schematic views showing both parts of the casing of the padlock in accordance with the first preferred embodiment of the present invention;

Fig. 6 is a front view of the padlock in accordance with the first preferred embodiment of the present invention;

Fig. 7 is a sectional view taken along Line A-A in Fig. 6;

Figs. 8A to 8C are schematic views showing the operations of the padlock in accordance with the first preferred embodiment of the present invention, wherein a key is inserted into the latching tube so as to move the latching tube;

Fig. 9 is a partially sectional view of the padlock in accordance with the first preferred embodiment of the present invention, wherein an elastic element is optionally provided;

Fig. 10 is a perspective view of the padlock in accordance with the first preferred embodiment of the present invention, showing the pivotal movement of the first end of the shackle unlocked by using a key;

Figs. 11 is a partially sectional view of a padlock in accordance with a second preferred embodiment of the present invention;

Fig 12A to Fig 12B are schematic views showing the operations of the padlock in accordance with the first preferred embodiment of the present invention, wherein the dials of the combination locking mechanism are adjusted so as to unlock the first end of the shackle;

5 Fig. 13 is a perspective view of the padlock in accordance with the first preferred embodiment of the present invention showing the pivotal movement of the first end of the shackle unlocked by operating the combination locking mechanism;

10 Figs. 14A and 14B are schematic views showing the operations of a padlock in accordance with a third preferred embodiment of the present invention, wherein a key is inserted into the latching tube so as to move the latching tube; Fig. 15 is a top plan view of the padlock in accordance with the third preferred embodiment of the present invention as shown in Fig. 14A;

15 Figs. 16A and 16B are schematic views showing the operations of a padlock in accordance with a fourth preferred embodiment of the present invention, wherein the latching tube is moved between a first position and a second position to unlock and lock the shackle;

20 Figs. 17A to 17B are schematic views showing the operations of a padlock in accordance with a fifth preferred embodiment of the present invention, wherein the latching tube is moved between a first position and a second position to unlock and lock the shackle; and

25 Figs. 18A to 18B are schematic views showing the operations of a padlock in accordance with a sixth preferred embodiment of the present invention, wherein the latching tube is moved between a first position and a second position to unlock and lock the shackle.

### **DETAILED DESCRIPTION OF THE INVENTION**

30 As shown in Figure 1, a padlock 1 in accordance with the first preferred embodiment substantially comprises a casing 11, a shackle 12, said shackle 12 is of a U-Shaped bar having one end pivotally connected to the casing 11, and can be rotated along the centre axis of said end within the

casing. As shown in Figure 2, the latching tube 13 is disposed within the casing 11. In the current embodiment, the latching tube 13 is a Disc Tumbler Cylinder, but can also be a Pin Tumbler Cylinder or other mechanisms performing the similar functions. The embodiments of the subject invention shown utilize Disc Tumbler Cylinder with a plurality of disks 131, a key hole 132 at one end. The disks 131 are received within the tube body with the peripheral edges thereof retractably extending from the circumferential surface of the tube body. In addition, the key hole 132 is provided on the bottom of the tube body for controlling the movements of the disks 131 in a way that when a key K is inserted into the key hole 132, the peripheral edges of the disks 131 are retracted to be received within the latching tube 13 (see Figure 3A); and when the key K is withdrawn from the key hole 132, the peripheral edges of the disks 131 extend out of the circumferential surface of the latching tube 13 (see Figure 3B). Since the latching tube 13 is a conventional member, the detailed structure thereof is not further discussed hereinafter.

As shown in Figures 4 and 5, the interior of the casing 11 defines a chamber 111 for receiving the latching tube 13 therein. The inner wall of the casing 11, which surrounds the chamber 111, is formed with a substantially L-shaped slot 113 and a recess 112 below the L-shaped slot 113. In addition, as shown in Figures 6 and 7, the L-shaped slot 113 includes a transverse slot 114 and a longitudinal slot 115 to receive and restrict the block 133 of the latching tube 13 such that it can only move along the L-shaped slot 113. The recess 112 is used to receive the peripheral edges of the disks 131 when they extend from the tube body of the latching tube 13, so as to position the latching tube 13. In other words, when the peripheral edges of the disks 131 are retracted to be received within the latching tube 13, the latching tube 13 disengages with the recess 112 of the casing 11 and the block 133 of the latching tube 13 is allowed to move along the transverse slot 114 and the longitudinal slot 115.

As shown in Figures 8A to 8C, by inserting the key K into the key hole 132 of the latching tube 13, the peripheral edges of the disks 131 are retracted to be received within the latching tube 13 and are disengaged with the recess 112 of the casing 11. Next, the key K is turned clockwise

to move the block 133 to a second end of the transverse slot 114, namely, the intersection between the transverse slot 114 and the longitudinal slot 115. Last, the key K is pulled downward to move the latching tube 13 to the lower end of the longitudinal slot 115. As shown in Figure 9, to facilitate the downward movement of the latching tube 13 toward the first position, an elastic element, e.g., a spring 15, is provided within the casing 11, between the inner upper wall of the casing 11 and the top of the latching tube 13 to bias the latching tube 13 downward.

It can be understood from the drawings that the stop member 14 is disposed on the top of the latching tube 13. In the current embodiment, it is formed integrally with the latching tube 13 but can also be separate from and be driven by the latching tube 13 in accordance with the other embodiments that will be described later. It is shown in the drawings that the stop member 14 is situated on top of the latching tube 13. When the discs 131 are retracted relative to the latching tube 13, the stop member 14 can be driven by the latching tube 13 and move to the first position as shown in Figure 8C, or move to the second position as shown in Figure 8A. Therefore, the shackle 12 pivotally connected in the casing 11 can receive the hole 141 at the free end while the stop member is at said second position, and can be maintained at locked position as shown in the drawings. As shown in Figure 10, as the stop member 14 is driven to move to the first position, and movement restriction to the shackle 12 is removed, the shackle is free to move to an unlocked position relative to the casing 11 as shown by the dotted lines in the drawings. An open notch for hooking objects to the shackle 12 is therefore formed between the shackle and the casing 11.

In view of the above, the shackle as disclosed by the subject invention does not need further machining of notches for locking the shackle to the casing, which simplifies the manufacturing process and increases the strength of the shackle 12.

In addition, to compensate the construction of the latching tube 13, the axial movement of the shackle 12 must be limited to prevent the shackle from released from the restriction of the latching tube 13 while the latching tube 13 is at the second position, and in turn losing the purpose of

restricting movement of the shackle.

Figure 11 shows a partially sectional view of a padlock in accordance with a second embodiment of the present invention. In the current embodiment, a hole 116 is formed within the casing 11'. In addition, the locking mechanism 16' comprises a shoulder 124 which protrudes from the second end 122 of the shackle 12 and is pivotally received within the hole 116 of the casing 11' such that the axial movement of the second end 122 of the shackle 12 is limited. However, since there is no combination locking mechanism provided, the padlock in the current embodiment can only function as a key-operated padlock.

The operation of the padlock 1 by means of a combination is described with reference to Figures 12A and 12B. The figures show an embodiment with a combination locking mechanism. By adjusting the dials 161 of the locking mechanism 16 to align the axial teeth 123 formed along the second end 122 of the shackle 12 with the axial grooves 162 of the dials 161, the second end 122 of the shackle 12 can be moved axially until the first end 121 of the shackle 12 is separate from the stop member 14. Accordingly, the padlock 1 is in an unlocked state.

To move the padlock 1 back to the locked state, the user first rotates the first end 121 of the shackle 12 to engage it with the hole 141 of the stop member 14 and the axial teeth 123 of the second end 122 of the shackle 12 simultaneously pass through the axial grooves 162 of the dials 161. By adjusting the dials 161, the axial teeth 123 are not allowed to pass through the axial grooves 162 and the padlock 1 is again in a locked state.

Based on the above descriptions, the padlock in accordance with the first preferred embodiment of the present invention is disclosed. It can be operated by either a key or a combination. When the casing further comprises said locking mechanism 16, the padlock 1 becomes a dual-operational lock. In other words, casing 11 is provided with two locking mechanisms for restricting movements of the shackle 12. Based on such construction, when the stop member 14 is maintained at the second position, the shackle 12 can still be moved axially by operating the dials 161 of the combination lock and be moved upward in an axial



direction and be free from the hole 141 and the restriction of the stop member 14. Figure 13 shows a perspective view of the padlock 1 unlocked by the combination, wherein an opening is formed between the shackle 12 and the casing 11 so as to hook the desired portions of the article to be locked. Figures 14A, 14B and 15 show another embodiment of the stop member 14; instead of a hole formed within the stop member 14, the top of the stop member 14 and the top of the casing 11 are in the same plane, and two opposite stop blocks or arms 142 are protruded upward from the top of the stop member 14 with a space formed between arms 142. When the stop member is moved to the second position, the stop blocks of arms 142 is disposed on the rotational path of the shackle 12 and blocks the rotation movement of the shackle 12. With respect to the current embodiment, the slot 113 can include only the transverse slot 114 since the latching tube 13 only needs to be rotated to drive the stop member 14 from the first position to the second position.

Figure 16A to 16B shows another embodiment of the stop member 14, in which the stop member 14 comprises a gear 173 with a bar 144 laterally attached to the center of the gear 173 at an end thereof. As the stop member 14 moves to the position as shown in Figure 16A, the shackle is free to rotate; when it moves to the position as shown in Figure 16B, the stop plate 144 blocks the rotation movement of the shackle 12. Furthermore, with respect to the ways the stop member driven by the latching tube 13, in addition to the above way of connection, the other embodiments can also adopt the structures as shown in Figures 17A to 17B or Figures 18A to 18B, in which the latching tube 13 and the stop member 14 are connected at inclined surfaces 171, 172, and the stop member can be driven to move to the first and second positions by means of their respective surfaces. The latching tube 13 and the stop member 14 can also be connected and driven by gears as gears 173, 174 as shown in Figures 16A to 16B, in which elements can be driven indirectly through teeth-like structures or gear relationships, and the latching tube 13 and the stop member 14 can relatively to desired positions.

In conclusion, the present invention provides a padlock having a shackle without a notch, and a padlock is able to position the shackle. Further, the current existing key-operated padlock in the market can be

applicable to the present invention to become a dual-operational padlock.

Although this invention has been disclosed and illustrated with reference to particular embodiments, the principles involved are susceptible for use in numerous other embodiments that will be apparent to persons skilled in the art. This invention is, therefore, to be limited only as indicated by the scope of the appended claims.

**What is claimed is:**

1. A padlock, comprising:

a casing;

a shackle being pivotally connected at one end to the casing, and can  
5 rotate to an open position and a locked position by using said end as  
a center of rotation;

a latching tube received and operative to be moved within the casing;  
and

a stop member driven by the latching tube so as to be moved between  
10 a first position where the first end of the shackle can be rotated by  
using the second end thereof as a center of rotation, and a second  
position where the stop member prevents the first end of the shackle  
from moving and the shackle and the casing co-define a closed loop.

2. The padlock according to Claim 1, further comprising an elastic  
15 element received within the casing for biasing the stop member  
toward the first position.

3. The padlock according to Claim 1, wherein the stop member forms a  
hole for receiving the first end of the shackle.

4. The padlock according to Claim 1, wherein the stop member has at  
20 least one stop block extending therefrom, and when the stop member  
is moved to the second position, the stop block is located on the path  
of rotation of the first end of the shackle for securing the shackle.

5. The padlock according to Claim 1, wherein the latching tube and the  
stop member are integrally formed.

6. The padlock according to Claim 1, wherein the latching tube and the  
25 stop member are directed to two separate members.

7. The padlock according to Claim 8, wherein the latching tube and the  
stop member form an inclined surface respectively which face each  
other such that the stop member is driven by the latching tube along

the inclined surfaces thereof.

8. The padlock according to Claim 8, wherein the latching tube and the stop member form teeth respectively which are engagable with each other such that the stop member is driven by the latching tube by means of the engagement of the teeth therebetween.

9. The padlock according to Claim 1, wherein the locking mechanism comprises a shoulder protruding from the second end of the shackle and a hole formed within the casing for receiving the shoulder.

10. A padlock, comprising:

a casing;

a shackle being pivotally connected at one end to the casing, and can rotate to an open position and a locked position by using said end as a center of rotation;

a latching tube received and operative to be moved within the casing; and

a stop member driven by the latching tube so as to be moved between a first position where the first end of the shackle can be rotated by using the second end thereof as a center of rotation, and a second position where the stop member prevents the first end of the shackle from moving and the shackle and the casing co-define a closed loop; and

a locking mechanism received within the casing, and allowing the axial movement of the shackle to an open state and limiting the axial movement of the shackle in a close state.

11. The padlock according to Claim 12, wherein the locking mechanism is a combination locking mechanism.

## **PADLOCK**

### **ABSTRACT OF THE DISCLOSURE**

5 A padlock comprises: a casing; a shackle being pivotally connected  
to the casing; a latching tube received and operative to be moved within  
the casing; and a stop member driven by the latching tube so as to be  
moved between a first position where the first end of the shackle can be  
rotated by using the second end thereof as a center of rotation, and a  
second position where the stop member prevents the first end of the  
shackle from moving, and the shackle and the casing co-define a closed  
10 loop.

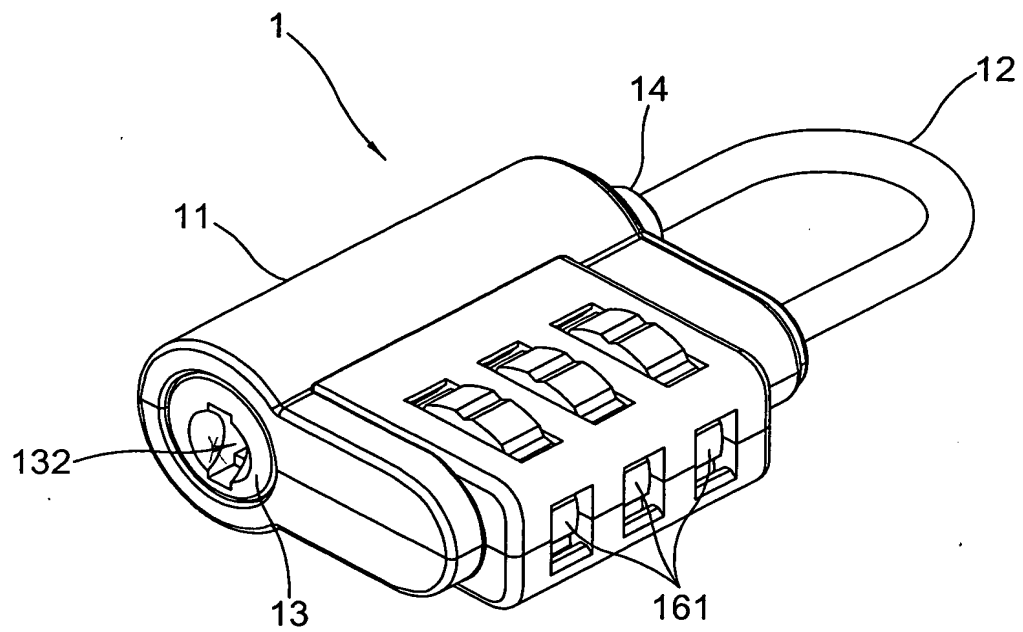
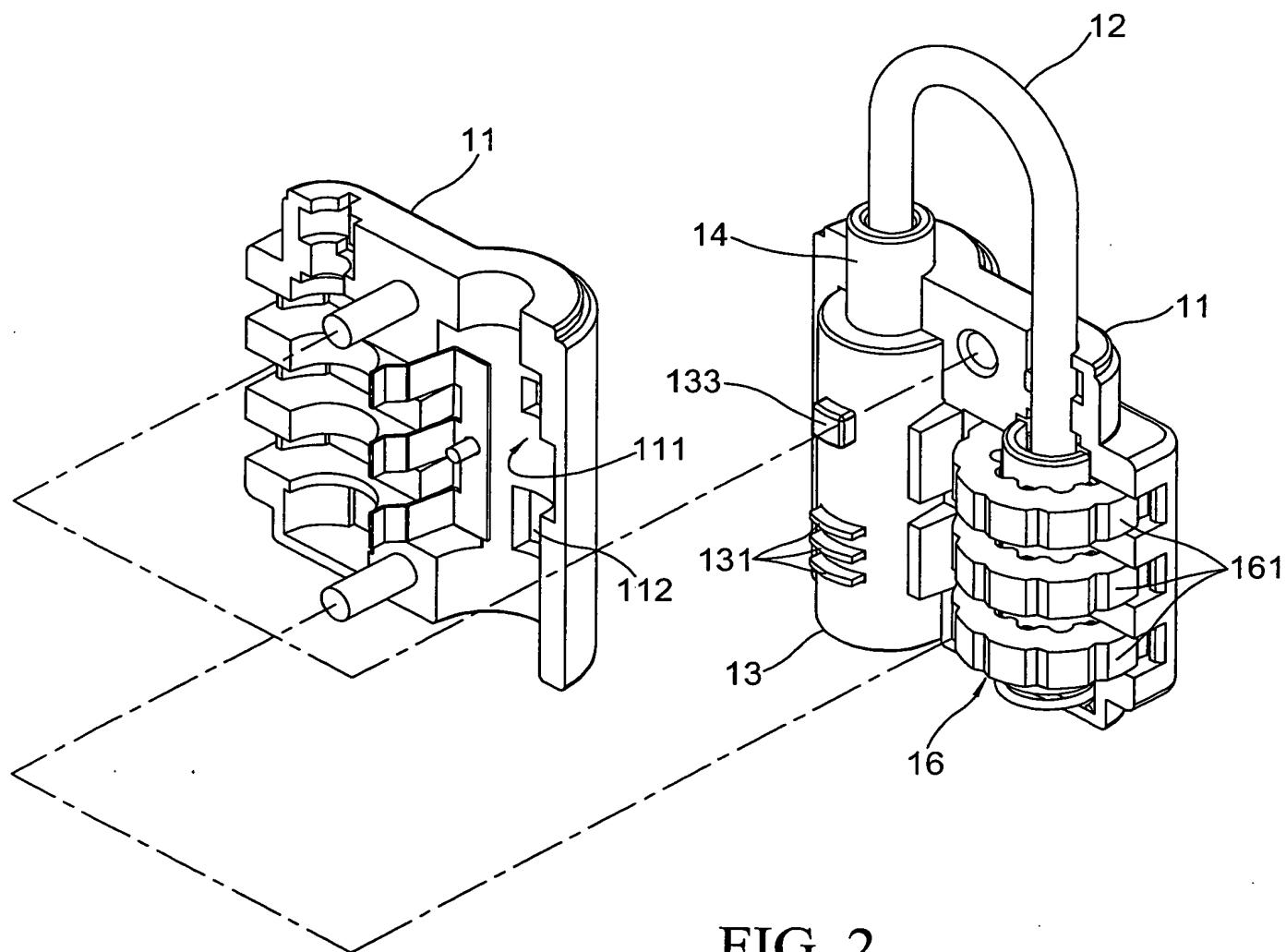


FIG. 1



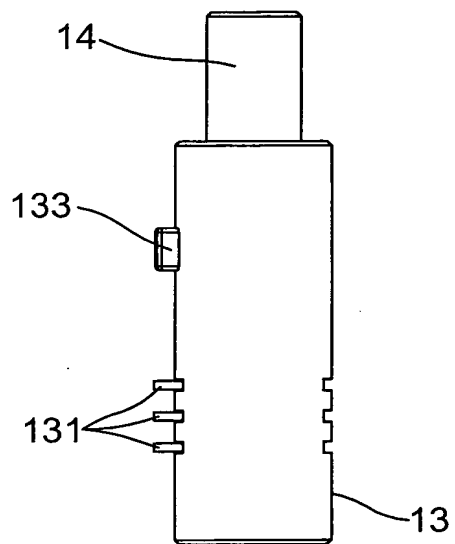


FIG. 3A

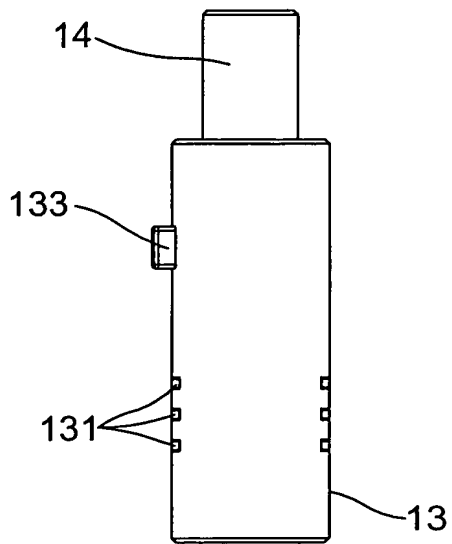
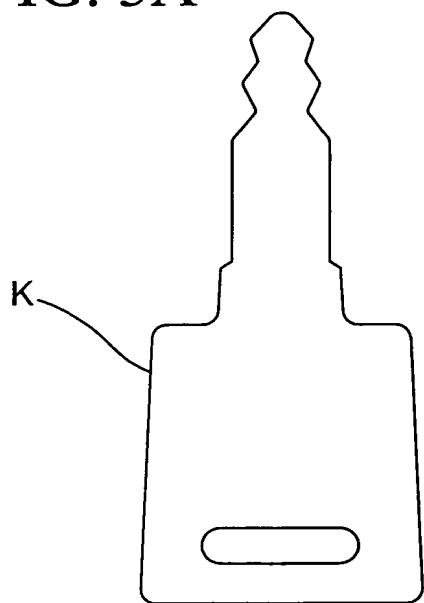
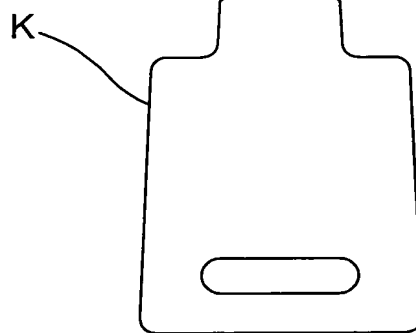


FIG. 3B





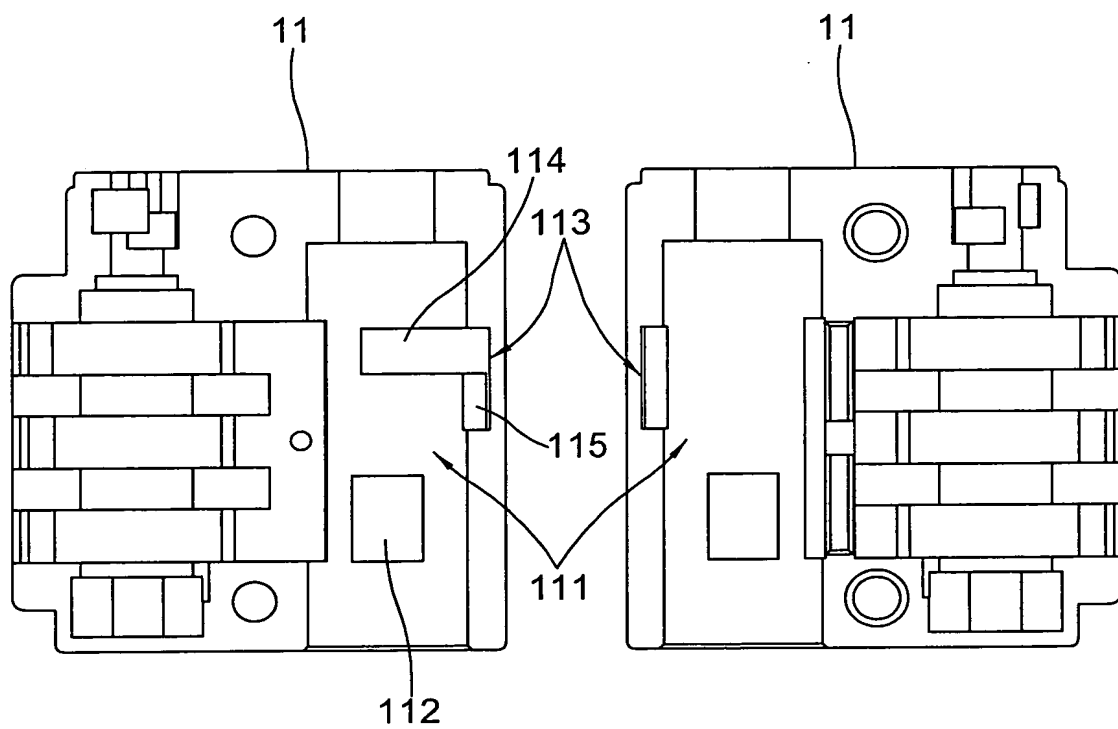


FIG. 4

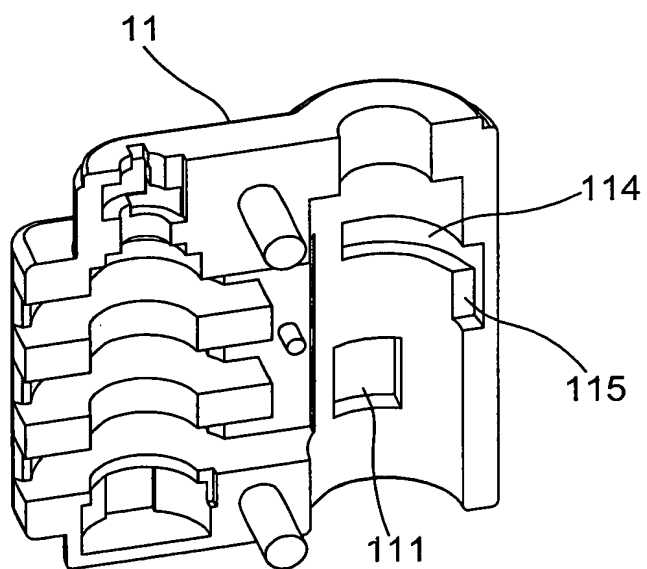


FIG. 5

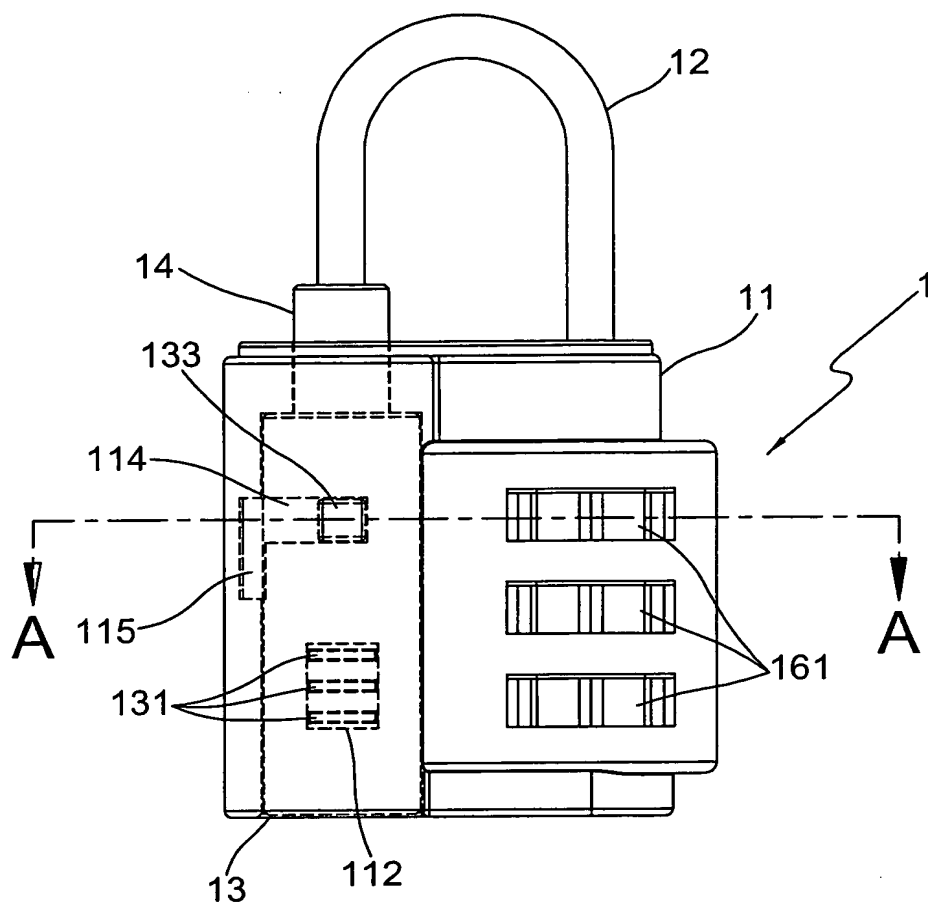


FIG. 6

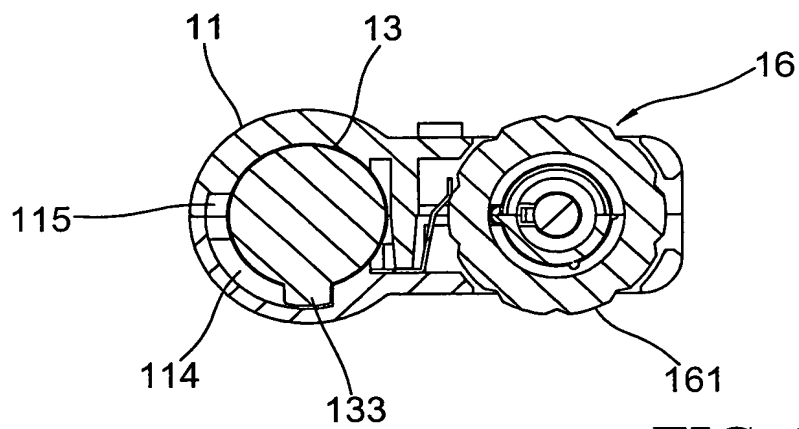


FIG. 7

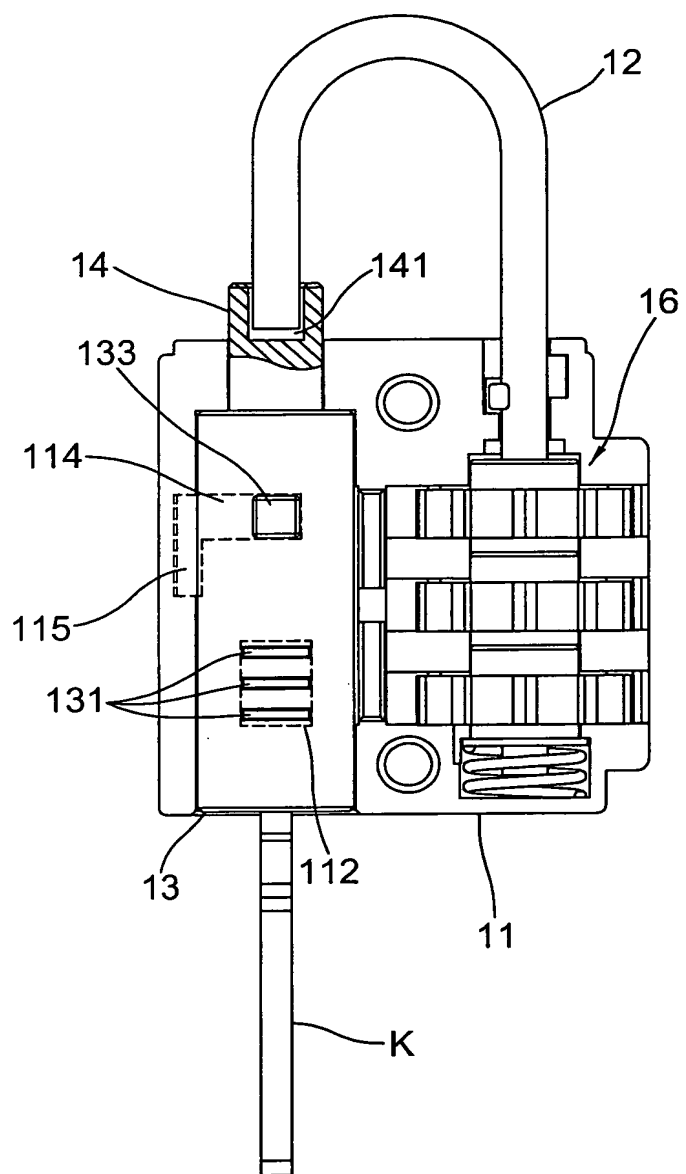


FIG. 8A

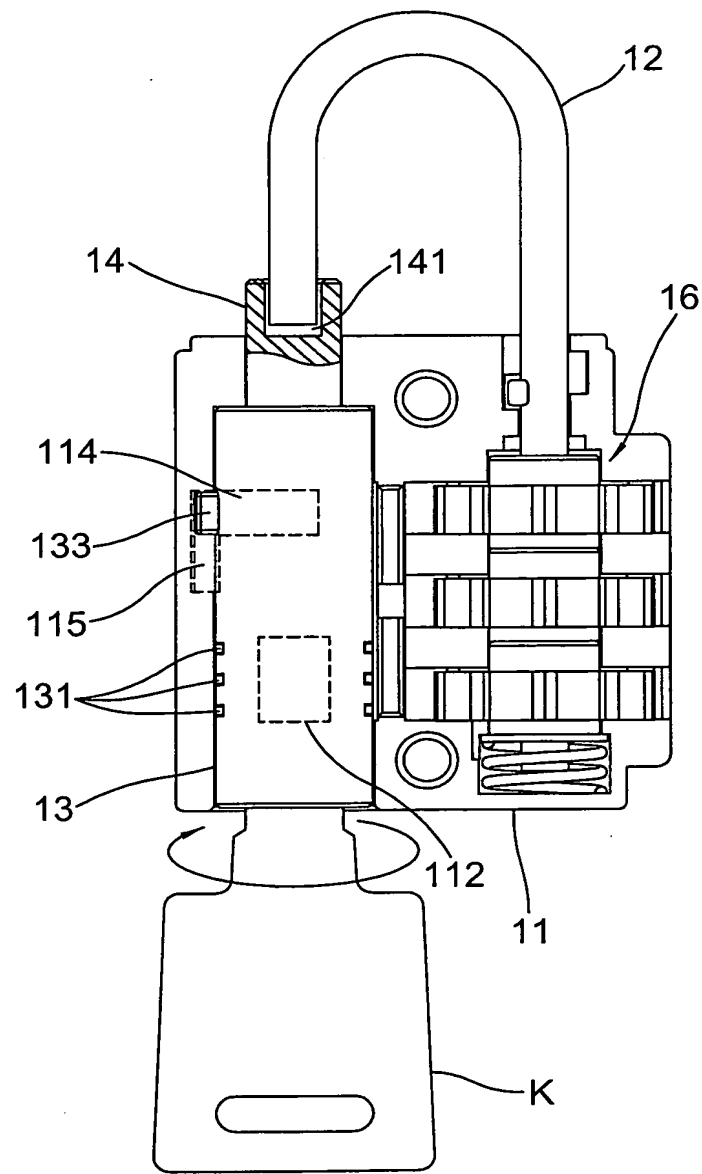


FIG. 8B

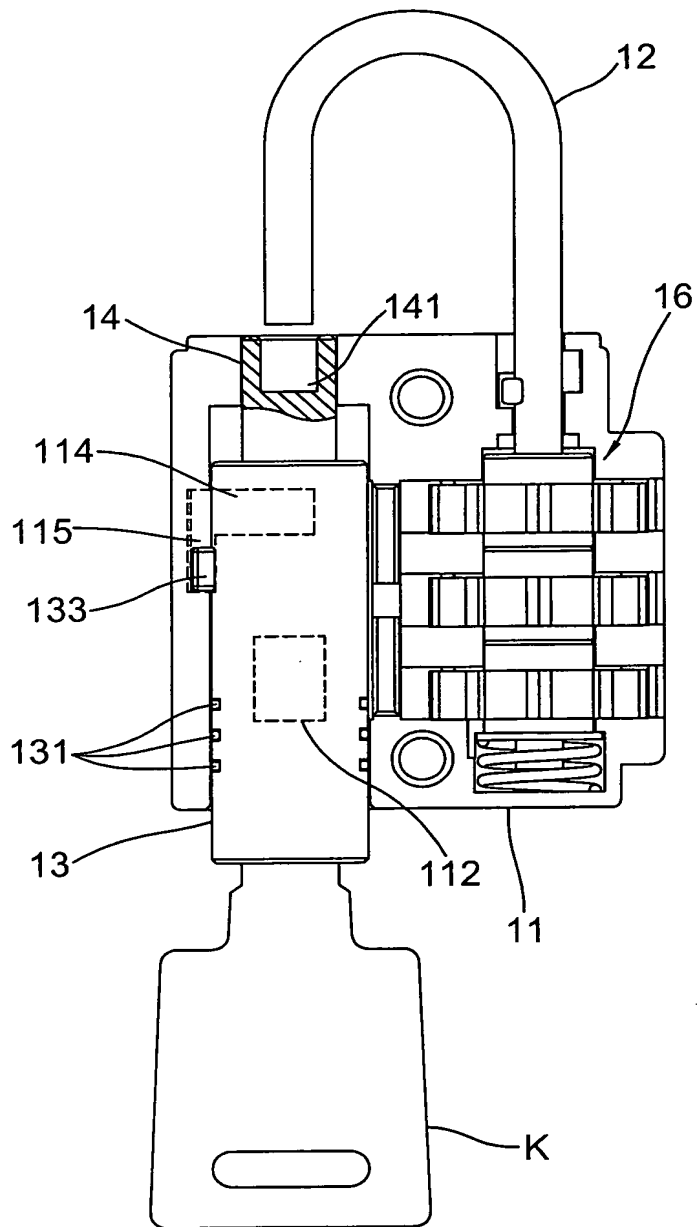


FIG. 8C

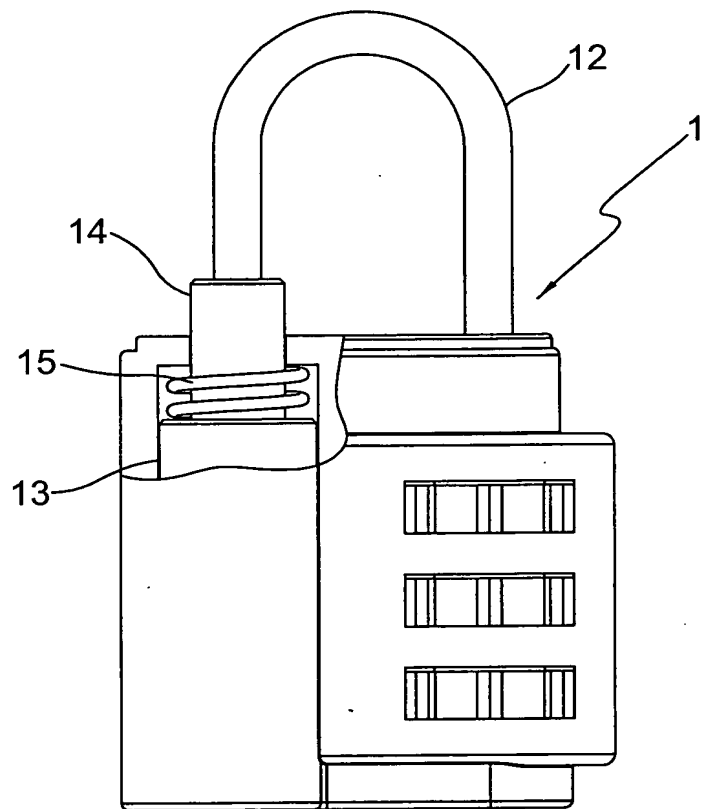


FIG. 9

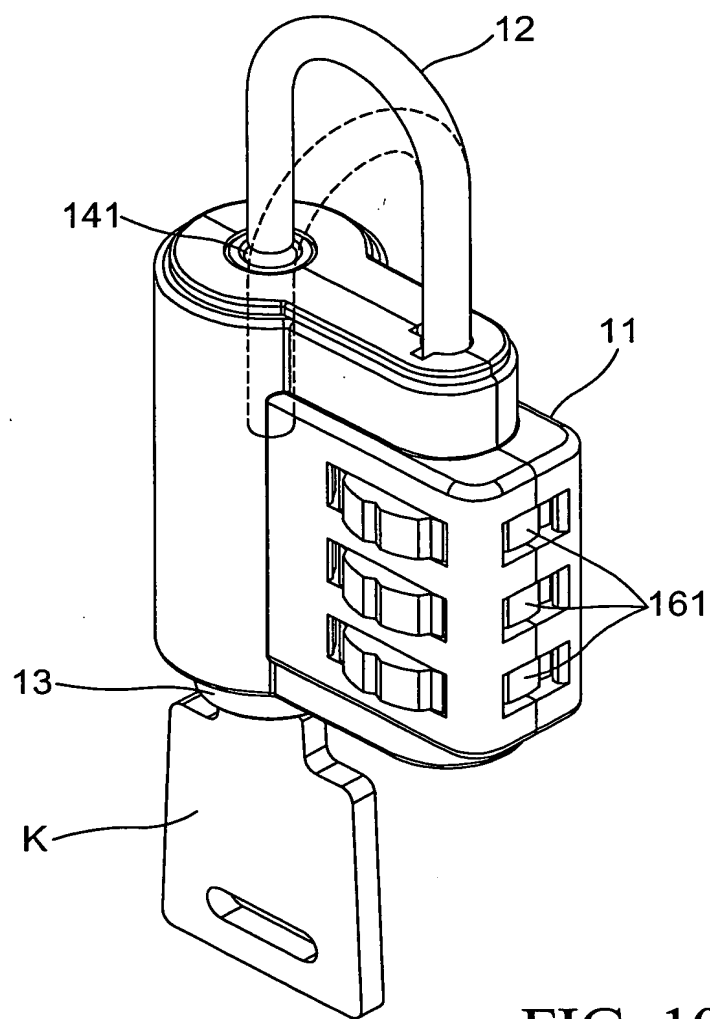


FIG. 10

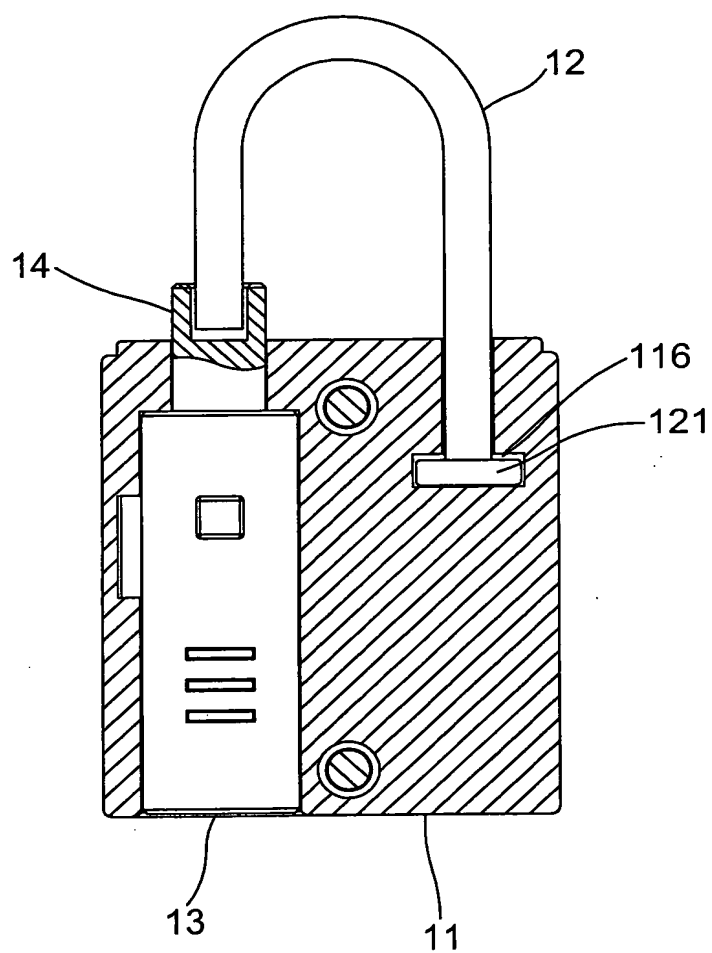


FIG. 11

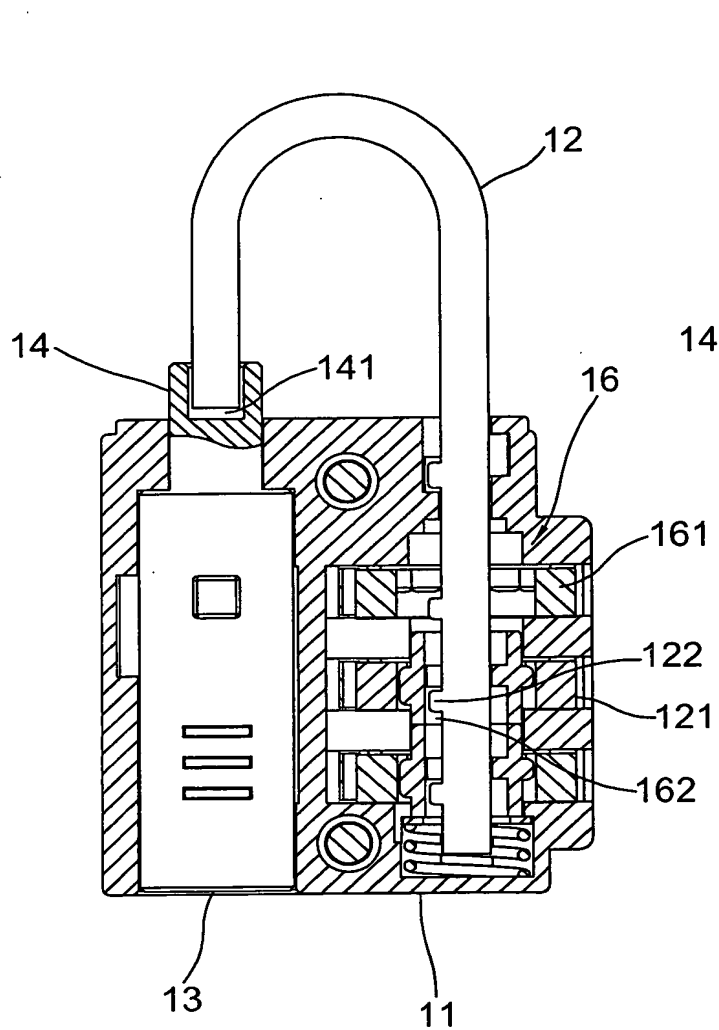


FIG. 12A

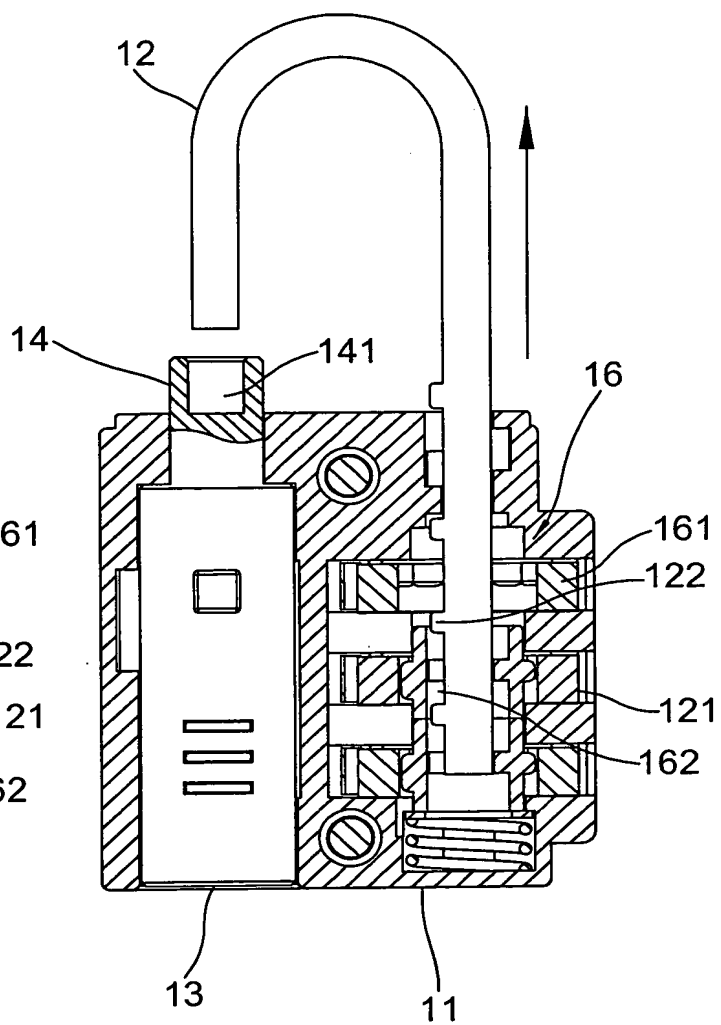


FIG. 12B

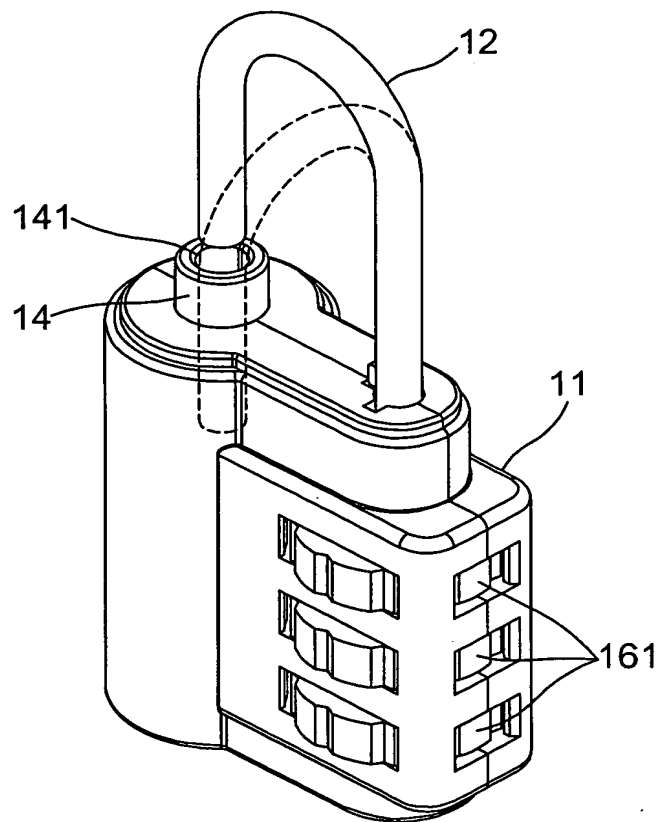


FIG. 13



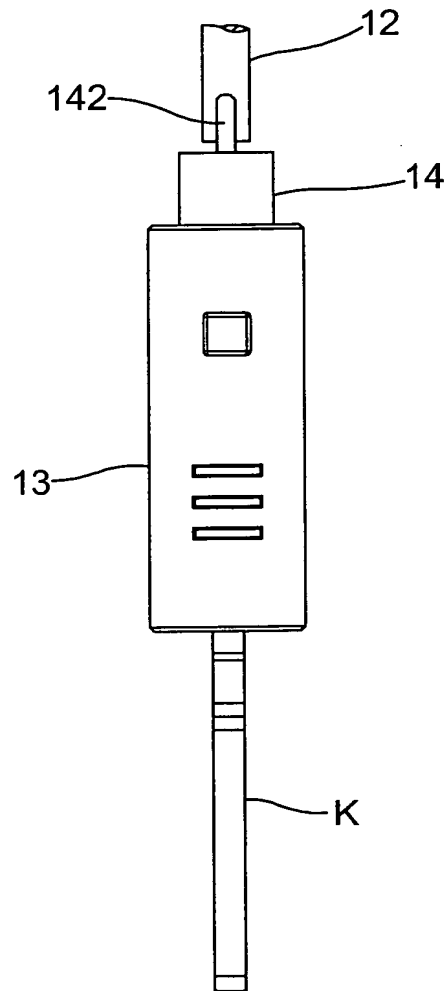


FIG. 14A

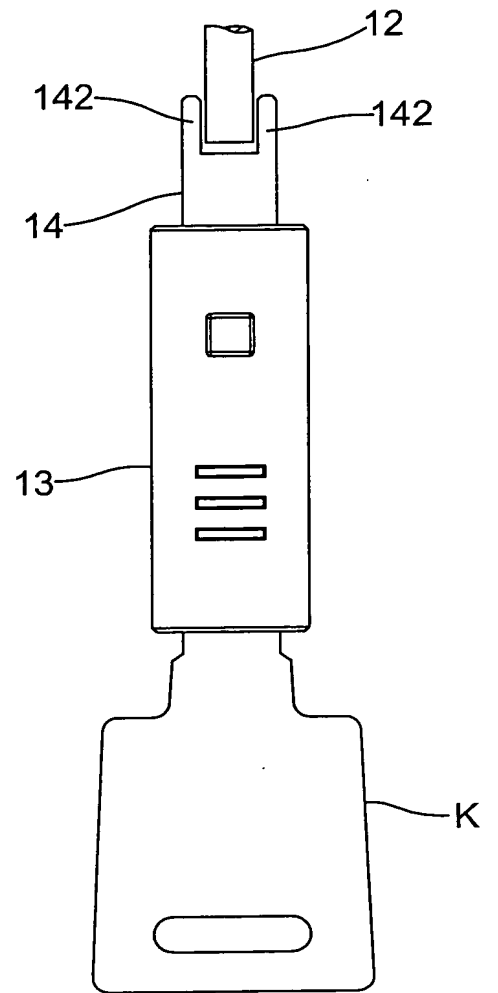


FIG. 14B

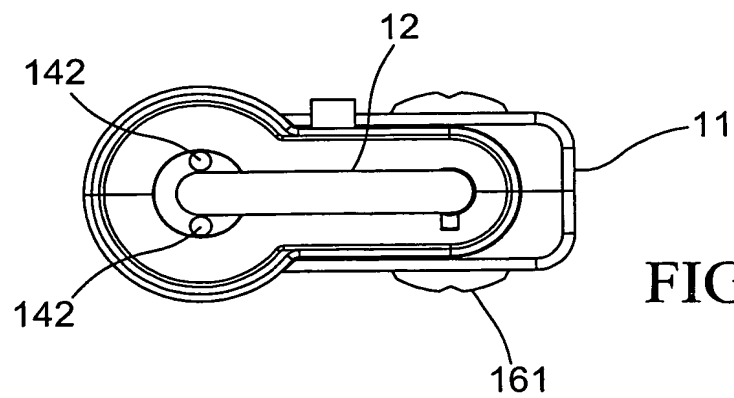


FIG. 15

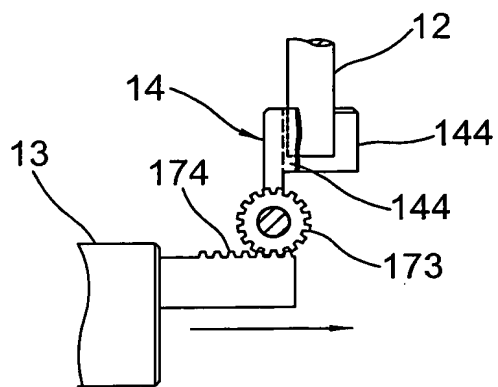


FIG. 16A

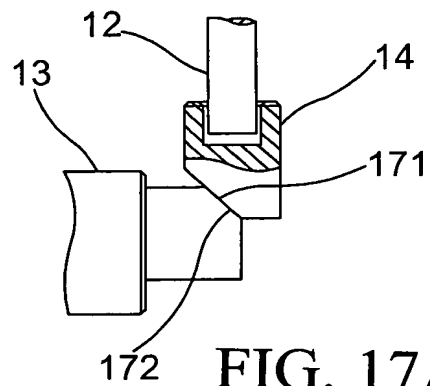


FIG. 17A

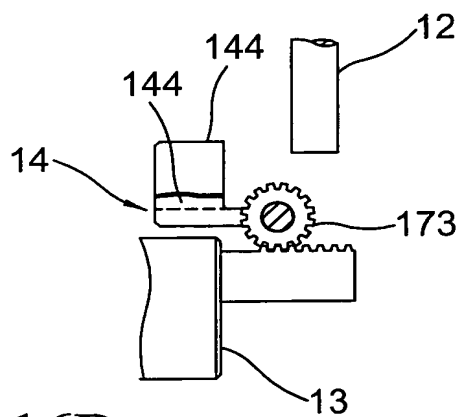


FIG. 16B

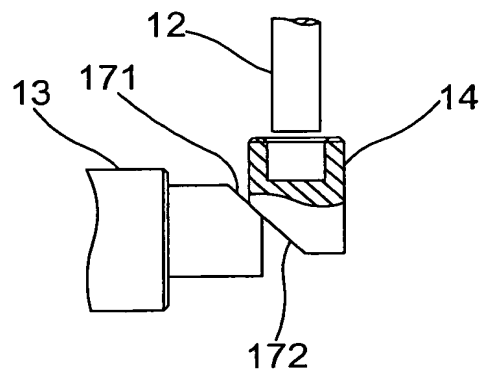


FIG. 17B

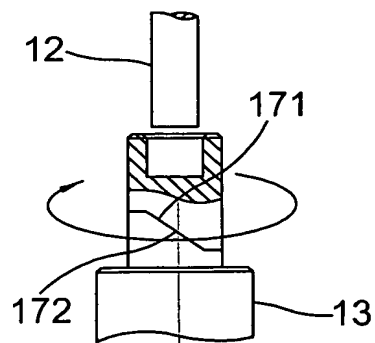


FIG. 18A

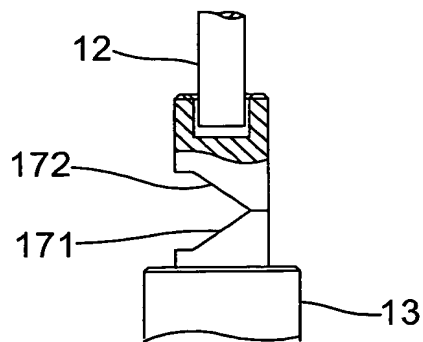
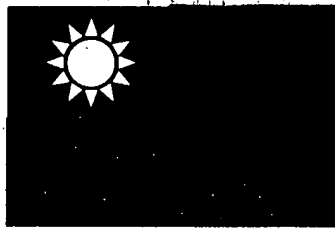


FIG. 18B



中華民國經濟部智慧財產局

INTELLECTUAL PROPERTY OFFICE  
MINISTRY OF ECONOMIC AFFAIRS  
REPUBLIC OF CHINA

茲證明所附文件，係本局存檔中原申請案的副本，正確無訛，  
其申請資料如下：

This is to certify that annexed is a true copy from the records of this  
office of the application as originally filed which is identified here

申 請 日 期：西元 2003 年 05 月 14 日  
Application Date

申 請 案 號：092208756  
Application No.

申 請 人：競泰股份有限公司  
Applicant(s)

CERTIFIED COPY OF  
PRIORITY DOCUMENT

局 長  
Director General

蔡 練 生

發文日期：西元 2003 年 12 月  
Issue Date

發文字號：09221279450  
Serial No.

申請日期：	IPC分類
申請案號：	

(以上各欄由本局填註)

## 新型專利說明書

一、 新型名稱	中 文	控制鉤環啟閉之掛鎖結構
	英 文	
二、 創作人 (共2人)	姓 名 (中文)	1. 林澤浩 2. 吳俊昇
	姓 名 (英文)	1. Renny Tse-Haw Ling 2. Chun-Sheng Wu
	國 籍 (中英文)	1. 美國 US 2. 中華民國 TW
	住居所 (中 文)	1. 台北縣中和市建一路93巷2號3樓 2. 台北縣中和市建一路93巷2號3樓
	住居所 (英 文)	1. 3F, No. 2, Lane 93 Chien-I Rd., Chung-Ho City, Taipei Hsien 2. 3F, No. 2, Lane 93 Chien-I Rd., Chung-Ho City, Taipei Hsien
三、 申請人 (共1人)	名稱或 姓 名 (中文)	1. 競泰股份有限公司
	名稱或 姓 名 (英文)	1. SINOX CO., LTD.
	國 籍 (中英文)	1. 中華民國 TW
	住居所 (營業所) (中 文)	1. 台北縣中和市建一路93巷2號3樓 (本地址與前向貴局申請者相同)
	住居所 (營業所) (英 文)	1. 3F, No. 2, Lane 93 Chien-I Rd., Chung-Ho City, Taipei Hsien
	代表人 (中文)	1. 蔡貴敏
	代表人 (英文)	1. Tsai Quei-Ming Ling



四、中文創作摘要 (創作名稱：控制鉤環啟閉之掛鎖結構)

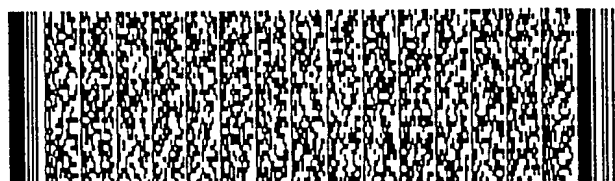
一種控制鉤環啟閉之掛鎖結構，其包括有一鎖殼、連設於鎖殼之一鉤環、設於鎖殼內之一制栓鎖筒，以及接受制栓鎖筒牽動之一止動件；當鉤環位於閉合位置時，此制栓鎖筒可藉由鑰匙操控而變換位置，並且驅使止動件移向允許鉤環自由旋轉之第一位置，或者移動到阻擋鉤環移動的第二位置，藉此達到控制鉤環啟閉的目的。

伍、(一)、本案代表圖為：第\_\_\_1\_\_\_圖

(二)、本案代表圖之元件代表符號簡單說明：

掛鎖.....1	鎖殼.....11
鉤環.....12	制栓鎖筒.....13
鑰匙孔.....132	止動件.....14
對號轉輪.....161	

英文創作摘要 (創作名稱：)



一、本案已向

國家(地區)競請專利

競請日期

案號

主張專利法第一百零五條準用  
第二十四條第一項優先權

無

二、☐主張專利法第一百零五條準用第二十五條之一第一項優先權：

競請案號：

無

日期：

三、主張本案係符合專利法第九十八條第一項☐第一款但書或☐第二款但書規定之期間

日期：



## 五、創作說明 (1)

### 【 新型所屬之領域 】

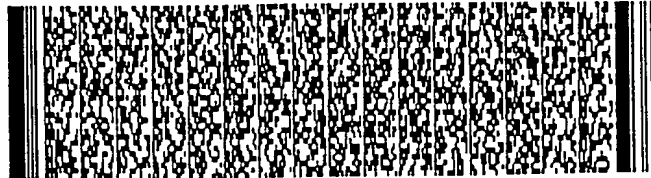
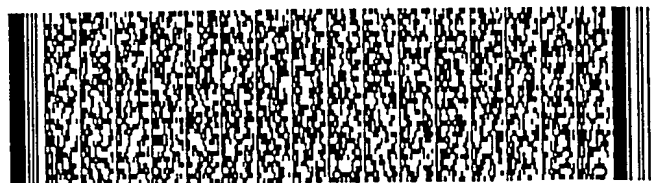
本創作關於一種控制鉤環啟閉之掛鎖結構，係指掛鎖上連設有一鉤環，且鉤環得以連接端為軸，相對於掛鎖旋轉而變換到開啟位置，以及接受鎖定的閉合位置。

### 【 先前技術 】

掛鎖是一種為人所熟知的產品，可廣泛應用於各種明顯或潛在具有安全顧慮的物件，提供鎖護物件的功能。以行李箱為例，為了防止他人任意開啟，即可利用掛鎖將拉鍊頭鎖上，使拉鍊無法拉開。

以配置的鎖機構而言，一般常見的掛鎖包括鑰匙鎖及對號鎖，鑰匙鎖是一種必須藉由鑰匙才能執行開鎖動作，而對號鎖則是一種不需鑰匙，利用對號動作執行開鎖動作的型式。兩款掛鎖於使用上各有其優點，鑰匙鎖可以避免對號鎖之設定密碼被猜中的缺點，而對號鎖則具有不需配製鑰匙的方便性。使用者可以依偏好選用其中一種型式。

於美國專利中可以見到由Yang提出之第6,539,761號專利，其中揭露了一種結合對號鎖與鑰匙鎖的雙制鎖，也就是說，使用者可以選擇使用鑰匙開鎖或者直接解開預設的密碼後開鎖。然而，不論是對號鎖與鑰匙鎖，鎖定的對象皆為鉤環（shackle），亦即在閉鎖狀態下，鉤環的兩端都會被鎖定限制在伸入鎖殼內的位置，與鎖殼圍構成封閉狀，讓套入鉤環的物件無法脫離；反之，當解除對鉤環的限制時，鉤環即可相對於鎖殼沿著軸向位移，使其一端離開鎖殼而形成一開口。



## 五、創作說明 (2)

但是誠如前述第761號專利以及相關技術中，鉤環之所以能接受鎖定，一般的作法都是在於鉤環上開設有一凹槽，讓鎖機構可以利用此凹槽進行對鉤環的閉制，惟在鉤環上設以凹槽的作法，除了會增加鉤環的加工程序，還會降低鉤環的結構強度。

### 【新型內容】

有鑑於上述之問題點，本創作之主要目的即在於提出一種不需在鉤環上開設凹槽，亦可對鉤環執行閉鎖的掛鎖結構。

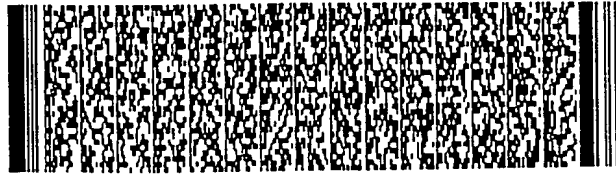
基於上述之目的，本創作提出一種控制鉤環啟閉之掛鎖結構，其包括有一鎖殼、連設於鎖殼之一鉤環、設於鎖殼內之一制栓鎖筒以及接受制栓鎖筒牽動之一止動件；其中制栓鎖筒可以經操控而驅使止動件移向允許鉤環自由活動之第一位置，或者移動到阻擋鉤環移動的第二位置，讓套入鉤環的物件無法脫離。

前述之掛鎖結構可進一步運用於現有的掛鎖上，讓此掛鎖成為一雙制鎖。亦即在鎖殼內更另外具備了一個可以對鉤環執行閉鎖動作之閉鎖機構。

為了更進一步瞭解本創作所揭之技術內容與構成之要件，以下即配合圖式說明如下：

### 【實施方式】

請參閱『第1圖』所揭之掛鎖結構，從其外觀可以見悉此掛鎖1包括有一鎖殼11與連設於鎖殼11上之一鉤環12，鉤環12是一支U型的桿體，其一端連設於鎖殼11，且



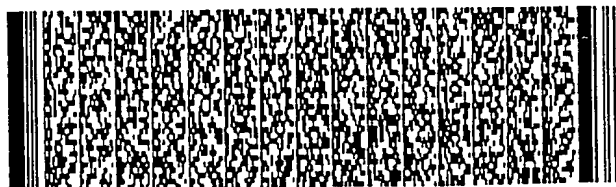
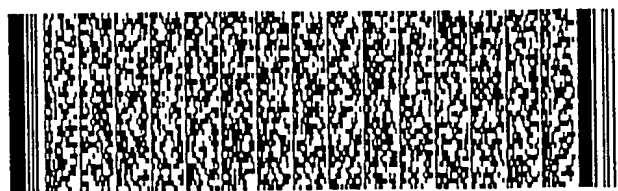


### 五、創作說明 (3)

可以該端為中心軸相對於鎖殼11旋轉。配合『第2圖』所示，於鎖殼11內的一側設有一制栓鎖筒13，並於制栓鎖筒13上連設一止動件14，制栓鎖筒13可以是層碟制栓鎖筒(Disc Tumbler Cylinder)、針珠制栓鎖筒(Pin Tumbler Cylinder)或是類似機構，本創作圖式中所顯示的乃是以層碟制栓鎖筒為實施例，其上設有複數碟片131，並於底端設有一鑰匙孔132。鑰匙孔132可供一鑰匙K插入而令所有碟片131內縮而保持在不超過制栓鎖筒13表面的位置上(如第3A圖所示)，而當鑰匙K抽離鑰匙孔132時，碟片131則會回復到凸出表面的位置上(如第3B圖所示)，由於此為一般習知技藝，在此即不再對制栓鎖筒13內部結構做進一步的說明。

於鎖殼11設有可供制栓鎖筒13容置之滑槽111，並於滑槽111內更形成有凹陷之限位槽112，此限位槽112恰好與碟片131的所在位置對應，讓凸出於制栓鎖筒13的碟片131可以伸入限位槽112內，令容置於鎖殼11內的制栓鎖筒13保持定位。請再配合『第4、5圖』所揭之鎖殼11內部結構圖。從中可以見到鎖殼11內更設有一導槽113，此導槽113係可供制栓鎖筒13外緣凸起之卡塊133嵌入，藉以讓卡塊133只能沿著導槽113的路徑變換到不同位置。如『第6、7圖』導槽113包括有一橫向槽道114以及一縱向槽道115，換言之，制栓鎖筒13在不受碟片131制動的情況下，即可沿著槽道路徑位移，變換與鎖殼11的相對位置。

請參閱『第8A~8C圖』所示制栓鎖筒13之操控示意

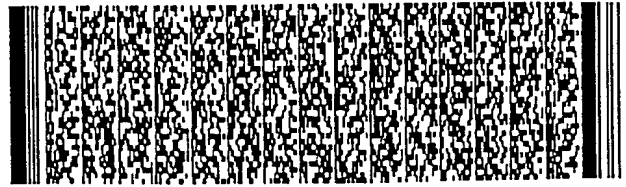
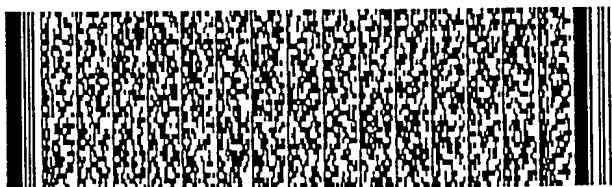


#### 五、創作說明 (4)

圖；當鑰匙K插入制栓鎖筒13底端的鑰匙孔132，驅使碟片131向內縮移後，制栓鎖筒13即可藉由鑰匙K旋轉掣動，令卡塊133到達橫向槽道114與縱向槽道115的交界處，隨後即可再順著縱向槽道115的方向，自鎖殼11底部拉出。在實施時，鎖殼11內可以更設有一復位元件15（如第9圖所示），如彈簧，可對止動件14（或制栓鎖筒13）施以朝向第一位置推移的彈性作用力，讓卡塊133移至橫向槽道114與縱向槽道115交界處時，即可藉由復位元件15朝縱向槽道115推移至使制栓鎖筒13伸出鎖殼11底部的位置。

從圖中可以見到在制栓鎖筒13的上端連設的止動件14是一個可以對鉤環12產生移動限制的元件，在實施時可以與制栓鎖筒13相連而成為一體構造，亦可為彼此分離但具有連動關係的結構態樣，或者與制栓鎖筒13之筒更藉透過一傳動機構連動，成為間接連動的關係。於圖中可見，止動件14係位於制栓鎖筒13的上方，當碟片131對制栓鎖筒13的解除制動能力時，止動件14即可藉由制栓鎖筒13牽動而移動到『第8C圖』所示的第一位置，或者移動到如『第8A圖』所示之第二位置。

藉此，連設於鎖殼11的鉤環12即可在止動件14位於前述之第二位置時，接受止動件14所設之插槽141套合住鉤環12自由端端緣，令鉤環12保持在圖式中所示之閉合位置。請配合『第10圖』所示，當止動件14經掣動移向前述之第一位置時，由於對鉤環12的位移限制解除，鉤環12即可相對於鎖殼11旋轉至虛線所示之開啟位置，使鉤環12與



## 五、創作說明 (5)

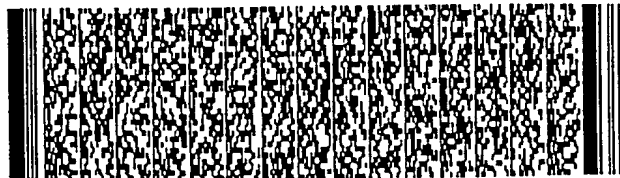
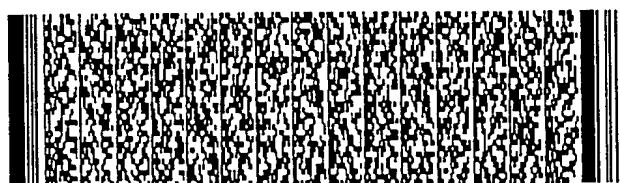
鎖殼11之間形成有一可供物件套入鉤環12上之開口。

由此可知，本創作所揭之鉤環12並不用為了接受被門制而在其上加工一凹槽，除了可減少鉤環12的加工程序之外，也可讓鉤環12的結構強度較設有凹槽為佳。

在此說明一點，配合制栓鎖筒13的建置，鉤環12必須被限制軸向移動，才能避免制栓鎖筒13即使位於第二位置時，鉤環12仍可軸向移動而脫離止動件13的限制，喪失被制動的效果。

在實施時，鉤環12可以如『第11圖』所示構造，將其連接於鎖殼11之該端設有一可以限制軸向位移的肩部121，並配合鎖殼11內匹配的槽孔116，設鉤環12無法軸向運動。此外，也可如前述相關各圖所示，在鉤環12連設於鎖殼11的該端增設一閉鎖機構16，此閉鎖機構16可以是採用習知各種型式之對號鎖或鑰匙鎖機構等，將鉤環12鎖定於定位。

請參閱『第12A~12B圖』，圖中顯示閉鎖機構16係以一對號鎖機構為實施例，如圖所示，其主要包括有複數個可以對鉤環12產生限位功能的對號轉輪161，環狀的對號轉輪161設有一中心槽孔162，可供具有凸齒122的鉤環12穿過。基於只有在槽孔162對應凸齒122的情形下才能讓鉤環12軸向抽移，因此當任一對號轉輪161的預設開鎖位置不正確時，鉤環12即會被限制軸向移動。鉤環12的兩端即可分別藉由止動件14及制栓鎖筒13與閉鎖機構16分別提供旋轉移動與軸向移動的限制。



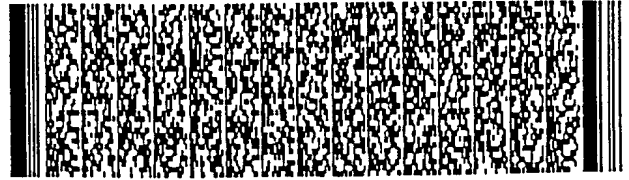
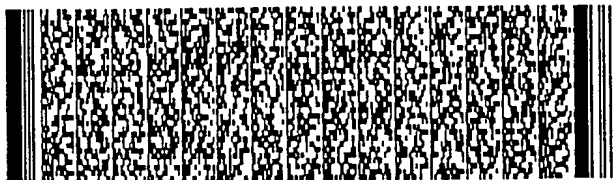
## 五、創作說明 (6)

當鎖殼11內進一步結合有前述閉鎖機構16時，此掛鎖1即成為一雙制鎖，也就是在鎖殼11內建置有兩個可以對鉤環12提供移動限制的機構。基於此構成，當止動件14保持在第二位置時，鉤環12還是可以藉由將所有對號轉輪161撥轉至讓鉤環12可以軸向移動的位置，並且沿著軸向朝上移動，使受制於止動件14之自由端可以脫離插槽141，進一步如『第13圖』所示，以連接端為軸自由旋轉，讓鉤環12與鎖殼11之間形成有一可供物件套入鉤環12上之開口。

『第14A~14B、15圖』為本創作止動件14之其他可實施之結構態樣；如圖所示，止動件14上端係延伸有至少一擋止塊142，且於移動到第二位置時，此擋止塊142係座落於鉤環12旋轉路徑上，阻制鉤環12旋轉。針對此實施例結構，導槽113僅包含橫向槽道114即可，因為制栓鎖筒13只需以旋轉運動即可驅使止動件14達到變換第一位置及第二位置的目的。

止動件14亦可為『第16A~16B圖』所示之型式，止動件14係以一軸桿143樞設於鎖殼11上，且於上端形成有擋板144，可以當止動件14移動到如『第16A圖』所示之位置時，允許鉤環12自由旋轉，並於移動到如『第16B圖』所示之位置時，則可藉由擋板144阻擋於鉤環12旋轉路徑上，阻制鉤環12移動。

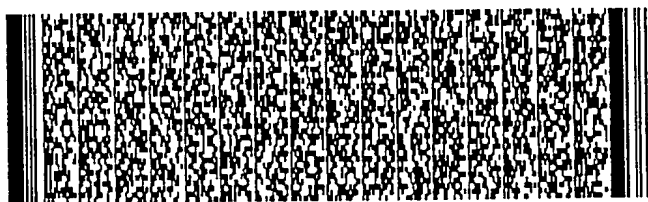
另外，針對制栓鎖筒13牽動止動件的方式，除了前揭一體連接的方式之外，在實施時也可採取如『第17A~17B



#### 五、創作說明 (7)

圖』或『第18A~18B圖』所示，制栓鎖筒13與止動件14透過接合的斜面171, 172，令止動件14可以藉由斜面運動而變換到第一、二位置。當然制栓鎖筒13與止動件14亦可運用如『第16A~16B圖』所示齒輪之類設有齒部173, 174等以嚙合傳動，或連桿傳動等方式獲得連動關係，亦或更藉助其他間接傳動件，讓制栓鎖筒13與止動件14達到變換位置的目的。

綜上所述，本創作是一種不需對鉤環開設凹槽，亦可對鉤環執行閉鎖的掛鎖結構，而且進一步可以運用於現有的掛鎖上，讓掛鎖成為一雙制鎖。惟以上所述者，僅為本創作之較佳實施例而已，舉凡依本創作申請專利範圍所做之均等設計變化，均應為本案之技術所涵蓋。



#### 圖式簡單說明

第1圖，為本創作之較佳實施例立體圖；

第2圖，為本創作之立體分解圖；

第3A~3B圖，為本創作制栓鎖筒操控示意圖；

第4、5圖，為本創作之鎖殼構造示意圖；

第6圖，為本創作之正視圖；

第7圖，為第6圖於A-A位置剖視圖；

第8A~8C圖，為本創作制栓鎖筒結合於鎖殼內之動作圖；

第9圖，為本創作於鎖殼內更設有一復位元件示意圖；

第10圖，顯示本創作制栓鎖筒解除對鉤環移動限制之示意圖；

第11圖，為本創作之鉤環之另一實施例構造圖；

第12A~12B圖，顯示本創作閉鎖機構結構暨鉤環之動作示意圖；

第13圖，為本創作閉鎖機構解除對鉤環移動限制之示意圖；

第14A~14B圖，顯示本創作止動件之另一實施例結構圖；

第15圖，為第14A圖所揭止動件結合於鎖殼上之俯視圖；

第16A~16B圖，顯示本創止動件之另一實施例結構暨制栓鎖筒與止動件另一種連動關係示意圖；

第17A~17B圖，顯示本創作制栓鎖筒與止動件另一種



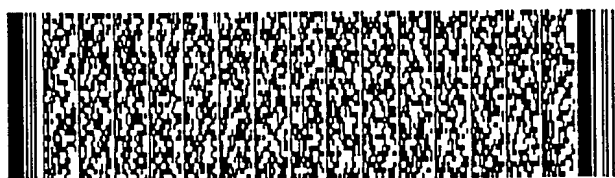
## 圖式簡單說明

連動關係示意圖；及

第18A~18B圖，顯示本創作制栓鎖筒與止動件另一種連動關係示意圖。

### 【圖式符號說明】

掛鎖.....1	卡塊.....133
鎖殼.....11	止動件.....14
滑槽.....111	插槽.....141
限位槽.....112	擋止塊.....142
導槽.....113	軸桿.....143
橫向槽道.....114	擋板.....144
縱向槽道.....115	復位元件.....15
槽孔.....116	閉鎖機構.....16
鉤環.....12	對號轉輪.....161
肩部.....121	槽孔.....162
凸齒.....122	斜面.....171, 172
制栓鎖筒.....13	齒部.....173, 174
碟片.....131	鑰匙.....K
鑰匙孔.....132	



## 六、觀請專利範圍

### 1. 一種控制鉤環啟閉之掛鎖結構，包括：

一鎖殼；

一鉤環，一端連設於鎖殼，且可以該端為中心軸相對於該鎖殼旋轉至一開啟位置及一閉合位置；

一制栓鎖筒，設於該鎖殼內，且可經掣動而變換位置；及

一止動件，接受該制栓鎖筒連動，俾於該鉤環位於閉合位置時，得經該制栓鎖筒牽動而移到允許該鉤環自由旋轉之第一位置，及阻擋該鉤環移動的第二位置。

### 2. 如申請專利範圍第1項所述控制鉤環啟閉之掛鎖結構，其中該鎖殼內更設有一復位元件，且該復位元件施以該止動件朝向第一位置移動彈性作用力。

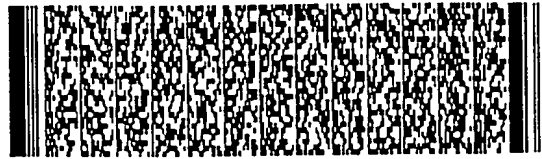
### 3. 如申請專利範圍第1項所述控制鉤環啟閉之掛鎖結構，其中該止動件具有一插槽，且於移動到第二位置時，該插槽可套合於該鉤環自由端。

### 4. 如申請專利範圍第1項所述控制鉤環啟閉之掛鎖結構，其中該止動件延伸有至少一擋止塊，且於移動到第二位置時，該擋止塊係座落於該鉤環旋轉路徑上。

### 5. 如申請專利範圍第1項所述控制鉤環啟閉之掛鎖結構，其中該制栓鎖筒與該止動件為一體連動之構造者。

### 6. 如申請專利範圍第1項所述控制鉤環啟閉之掛鎖結構，其中該制栓鎖筒與該止動件為分離的兩構件者。

### 7. 如申請專利範圍第6項所述控制鉤環啟閉之掛鎖結構，其中該制栓鎖筒與該止動件匹配設有接合之斜面，使該





## 六、競請專利範圍

止動件可以藉由斜面運動而變換位置者。

8. 如申請專利範圍第6項所述控制鉤環啟閉之掛鎖結構，其中該制栓鎖筒與該止動件匹配設有嚙合之齒部，令止動件可以藉由該齒部嚙合運動而變換位置。

9. 如申請專利範圍第6項所述控制鉤環啟閉之掛鎖結構，其中該止動件係樞設於鎖殼上，並且設有擋板，且於移動到第二位置時，該擋板係阻擋於該鉤環旋轉路徑上。

10. 一種控制鉤環啟閉之掛鎖結構，包括：

一鎖殼；

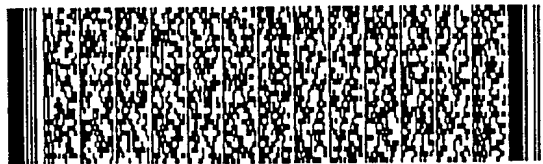
一鉤環，一端連設於鎖殼，且可以該端為中心軸相對於該鎖殼旋轉至一開啟位置及一閉合位置，並且可做軸向位移；

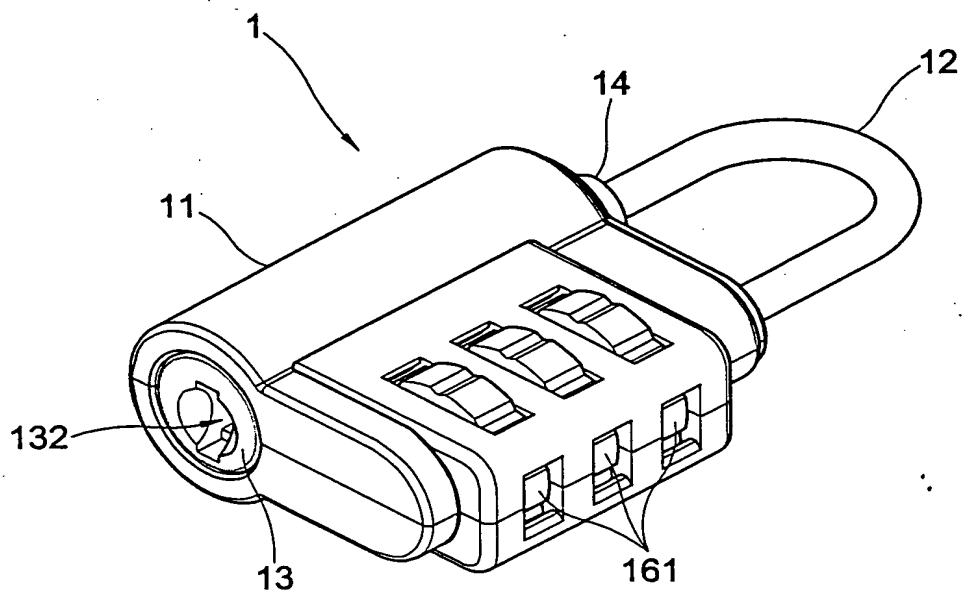
一制栓鎖筒，設於該鎖殼內，且可經掣動而變換位置；

一止動件，接受該制栓鎖筒連動，俾於該鉤環位於閉合位置時，得經該制栓鎖筒牽動而移到允許該鉤環旋轉位移之第一位置，及阻擋該鉤環旋轉位移的第二位置；及

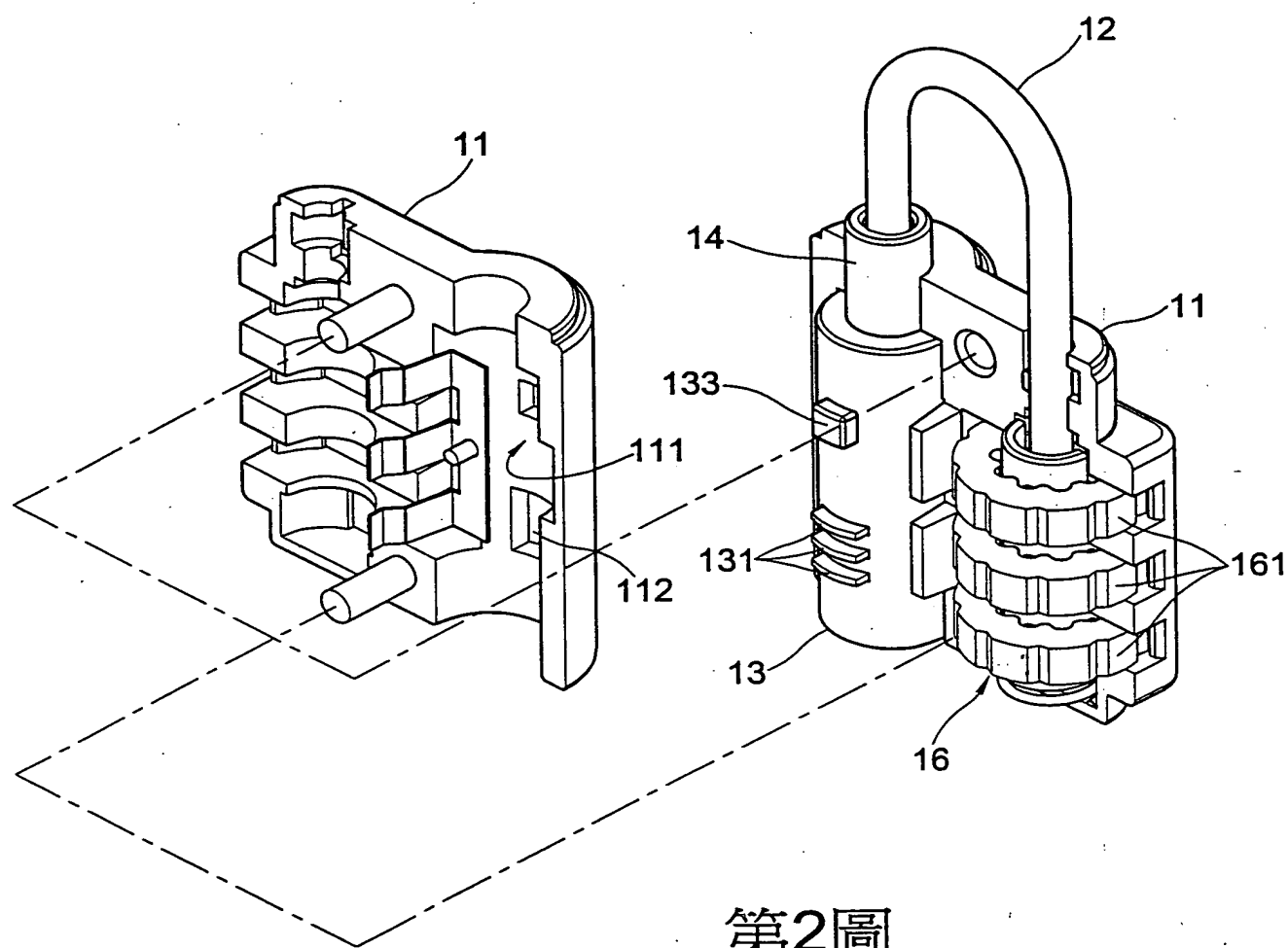
一閉鎖機構，設置於該鎖殼內，可變換成允許該鉤環軸向位移之開鎖狀態，及限制該鉤環軸向位移之閉鎖狀態。

11. 如申請專利範圍第10項所述控制鉤環啟閉之掛鎖結構，其中該閉鎖機構為一對號鎖機構。

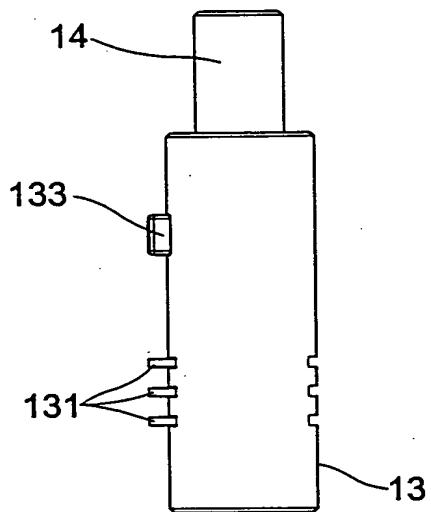




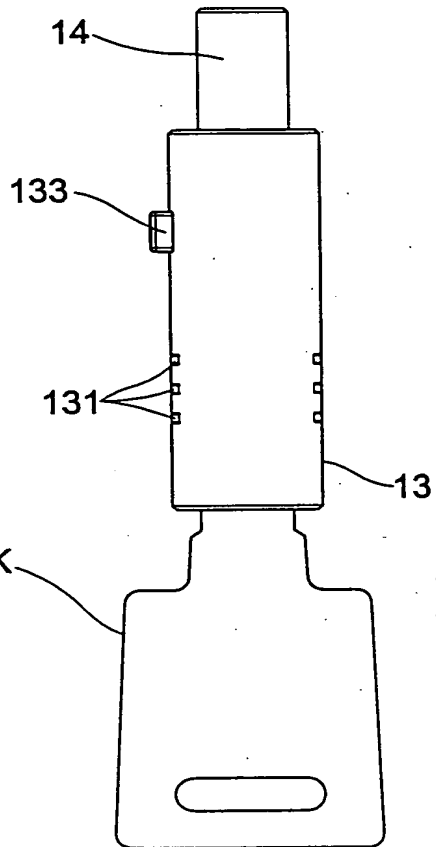
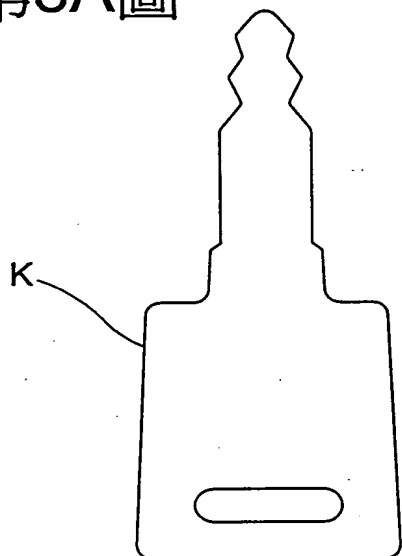
第1圖



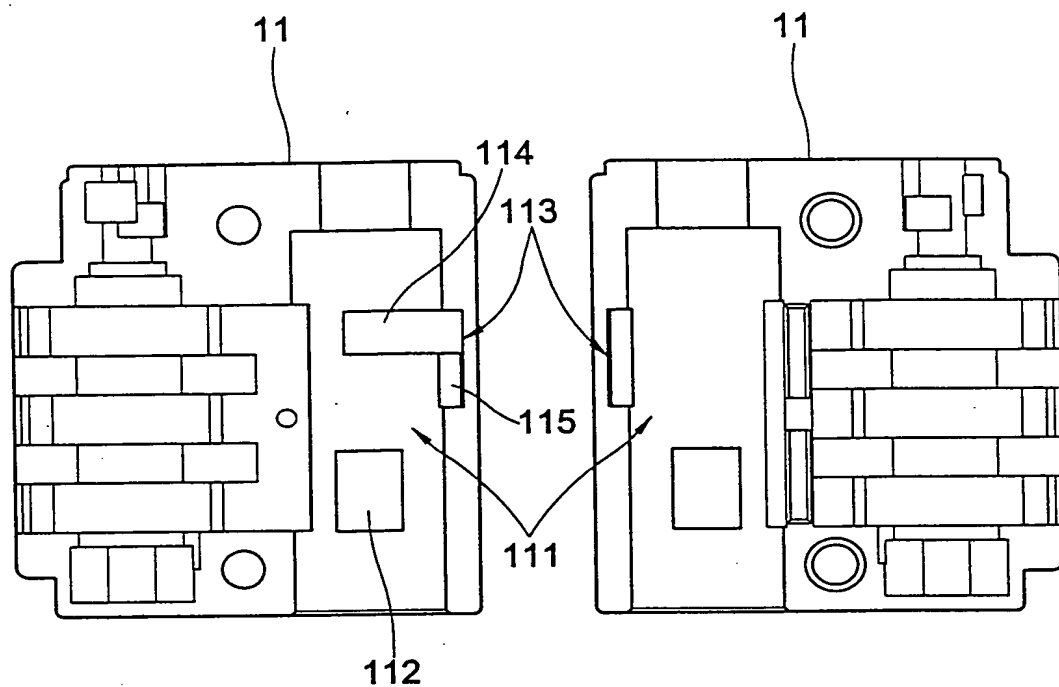
第2圖



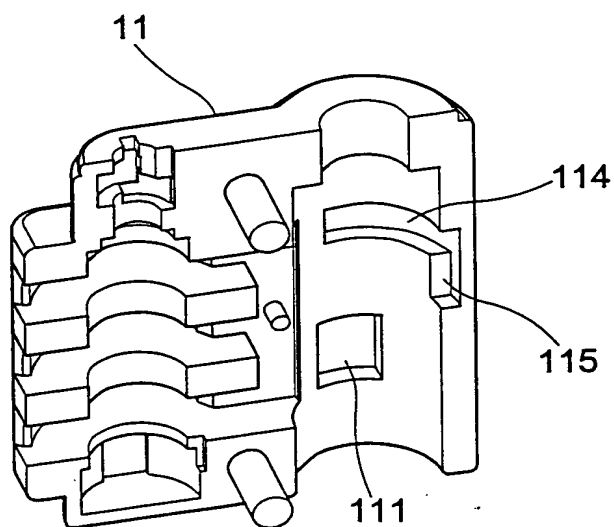
第3A圖



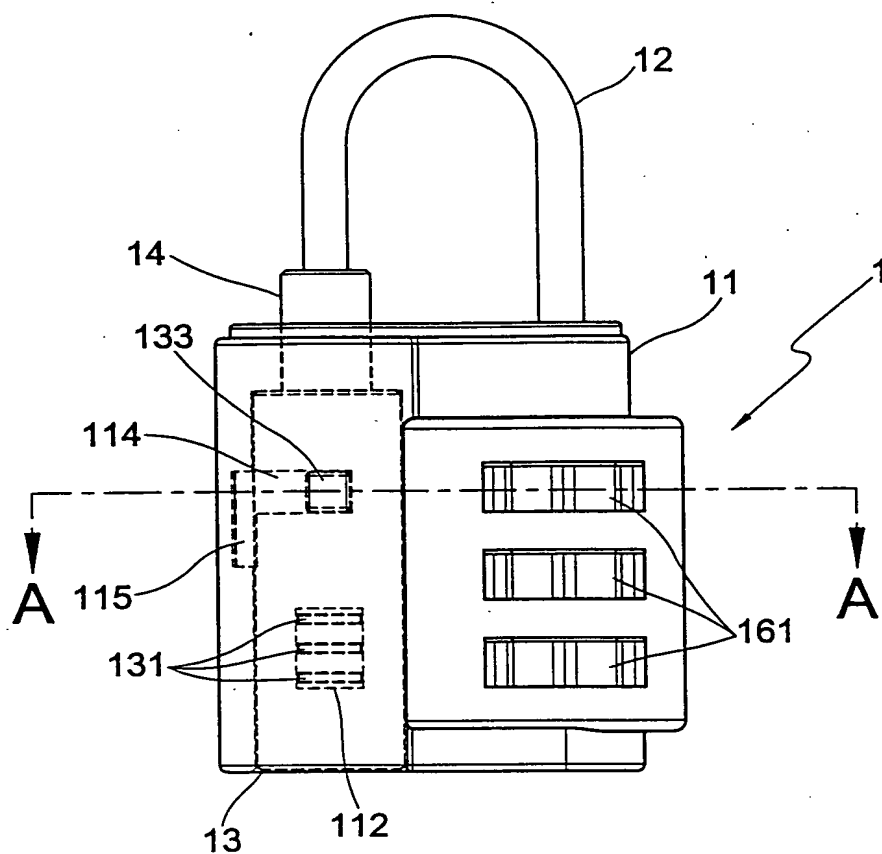
第3B圖



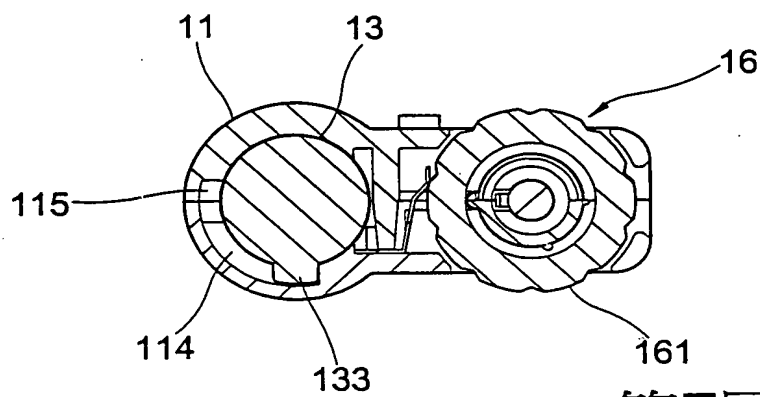
第4圖



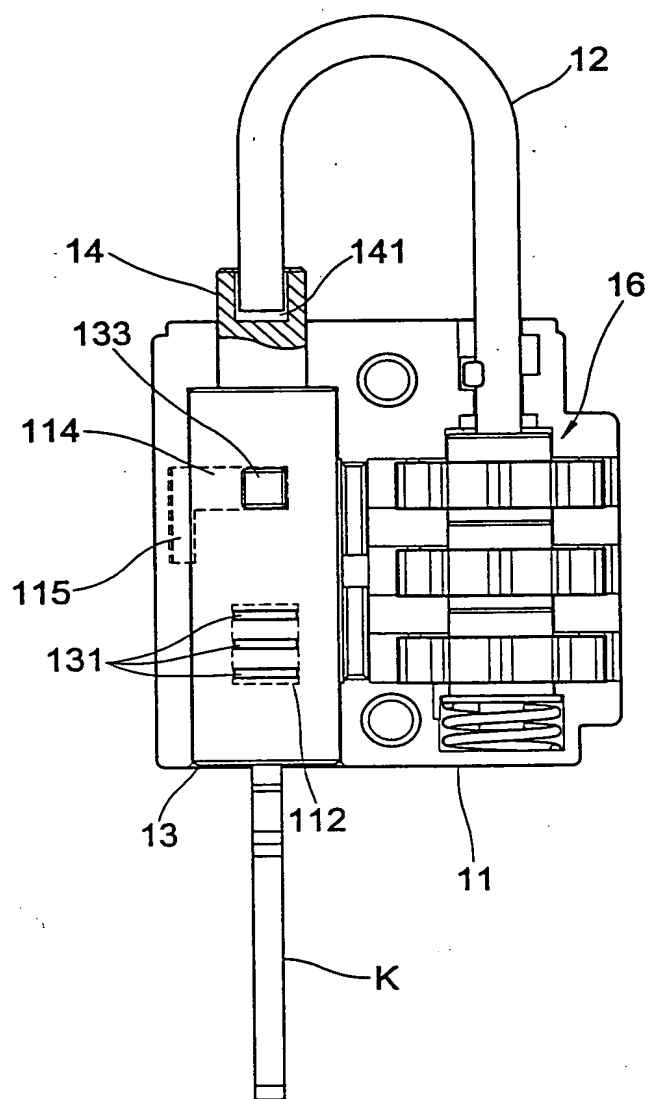
第5圖



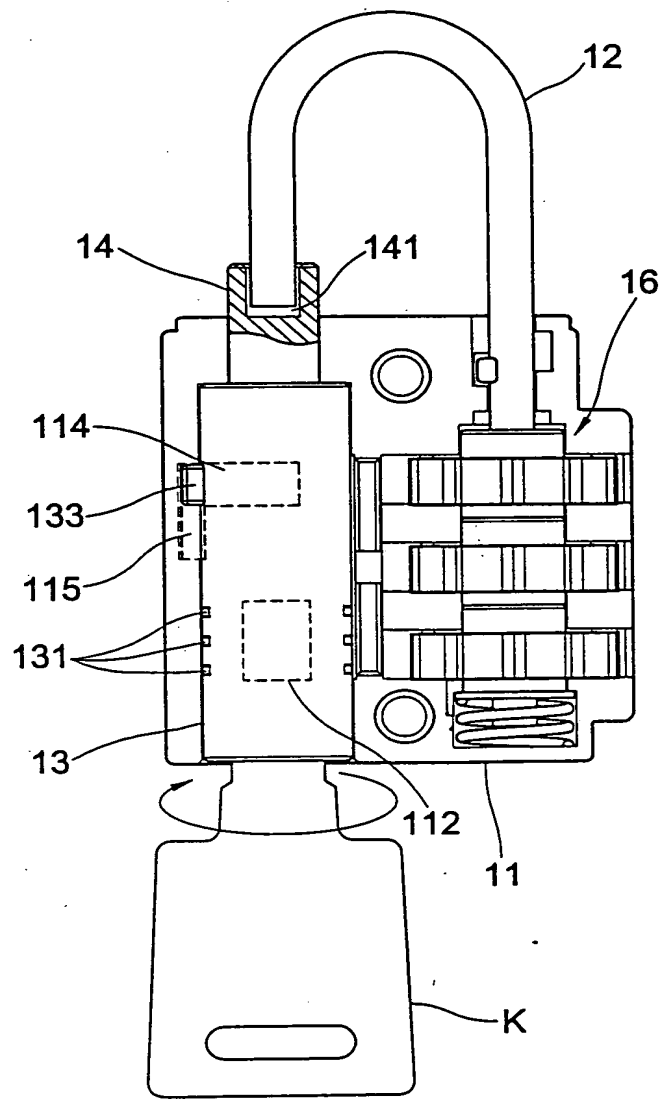
第6圖



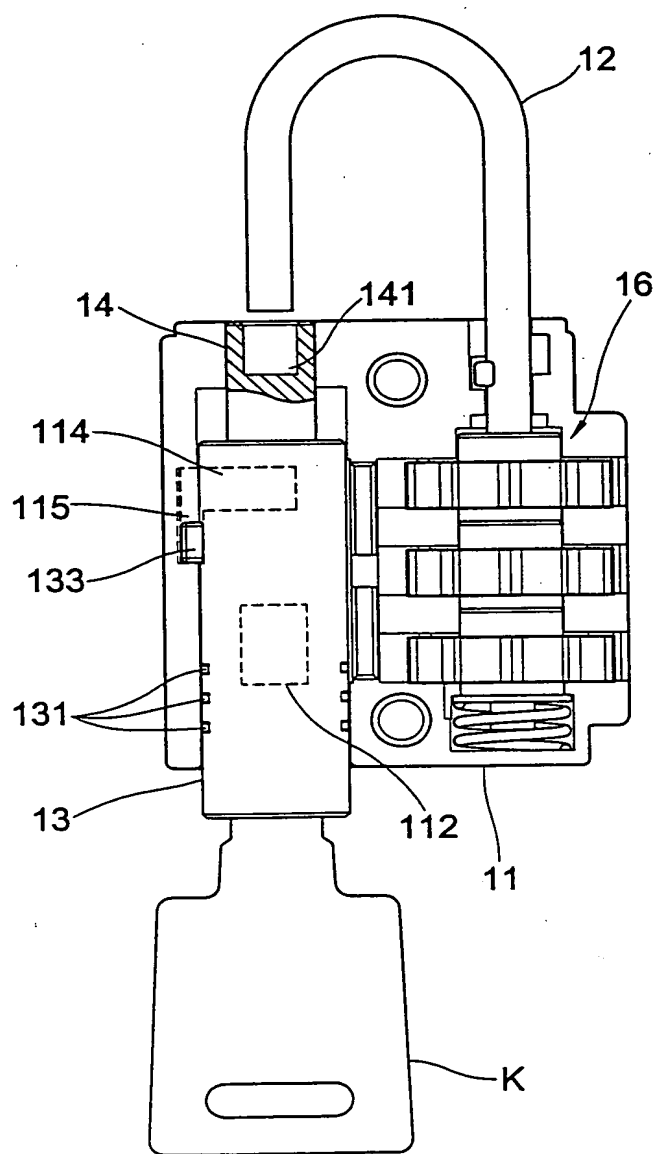
第7圖



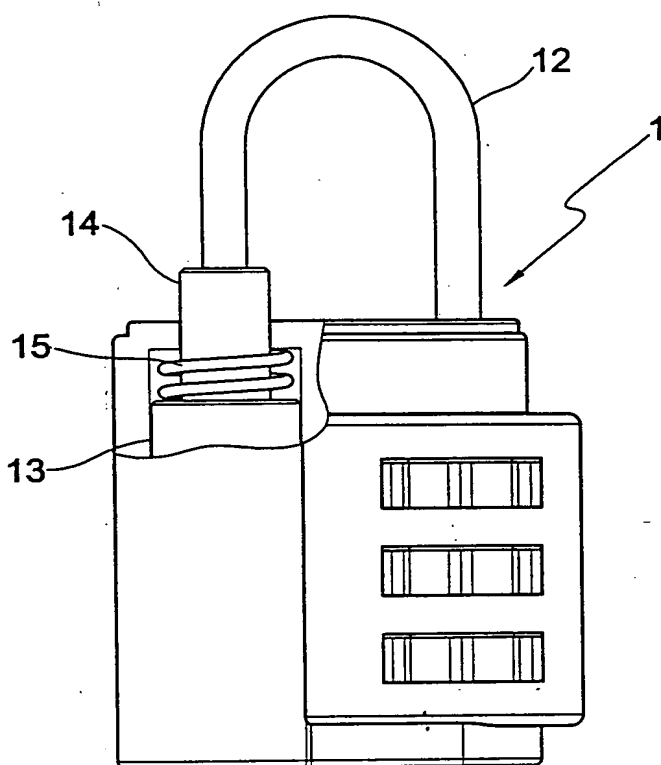
第8A圖



第8B圖

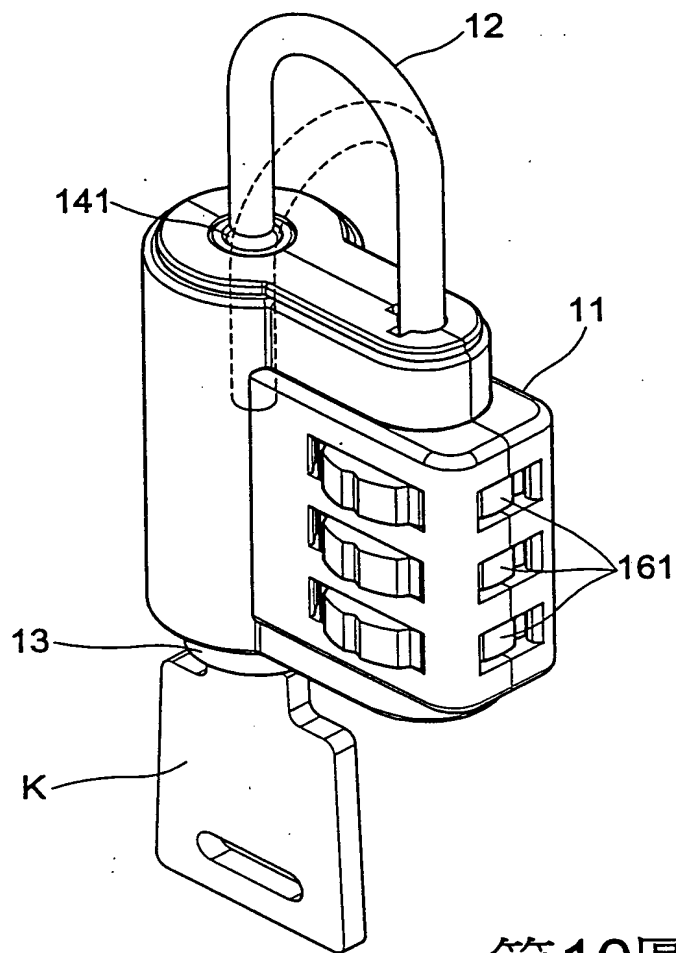


第8C圖

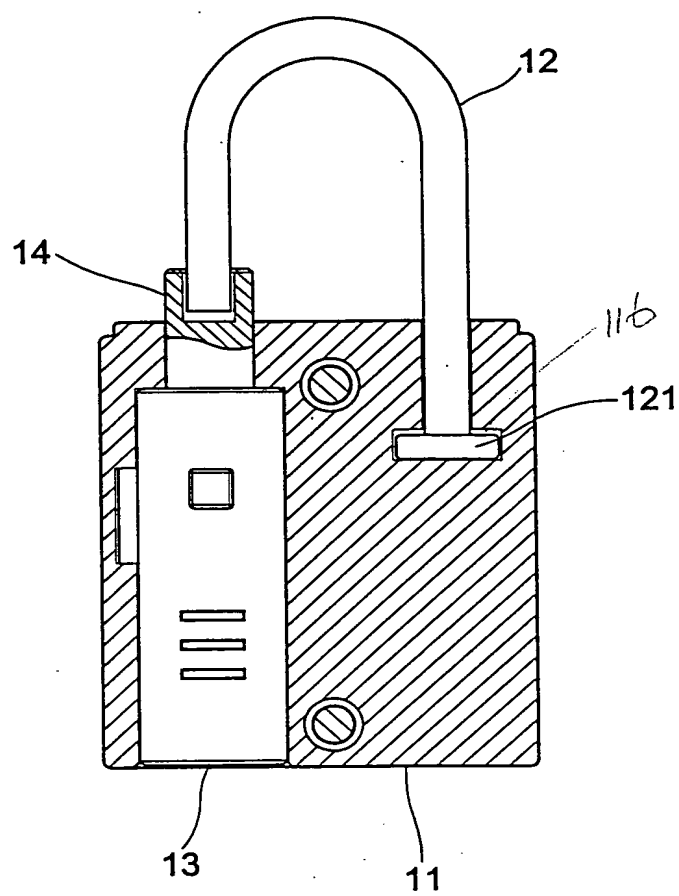


第9圖

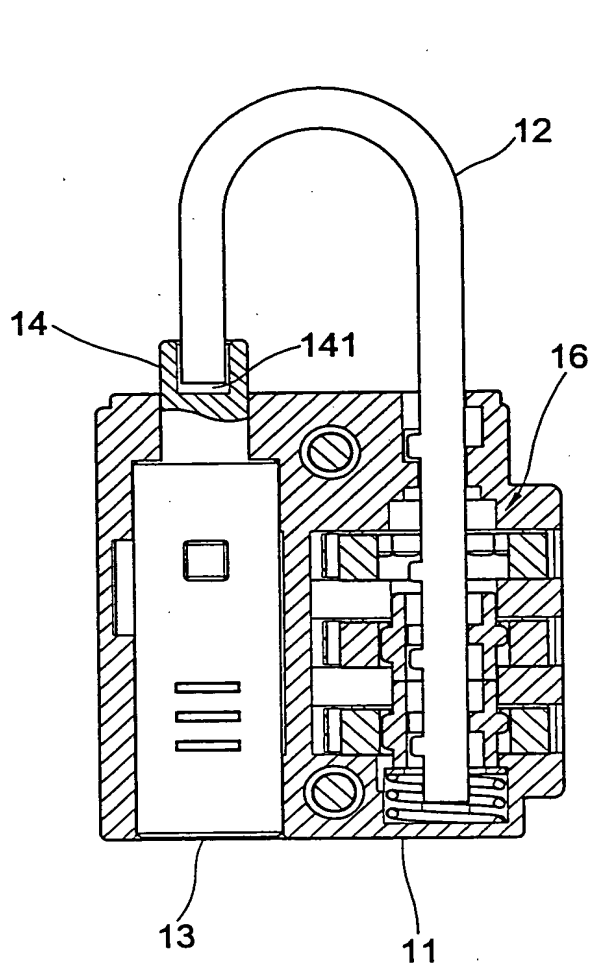




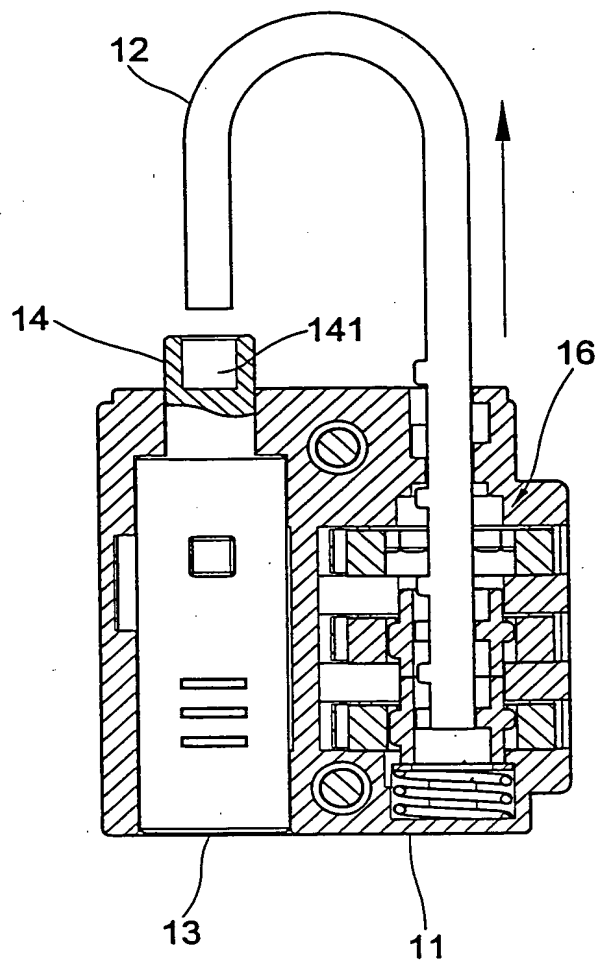
第10圖



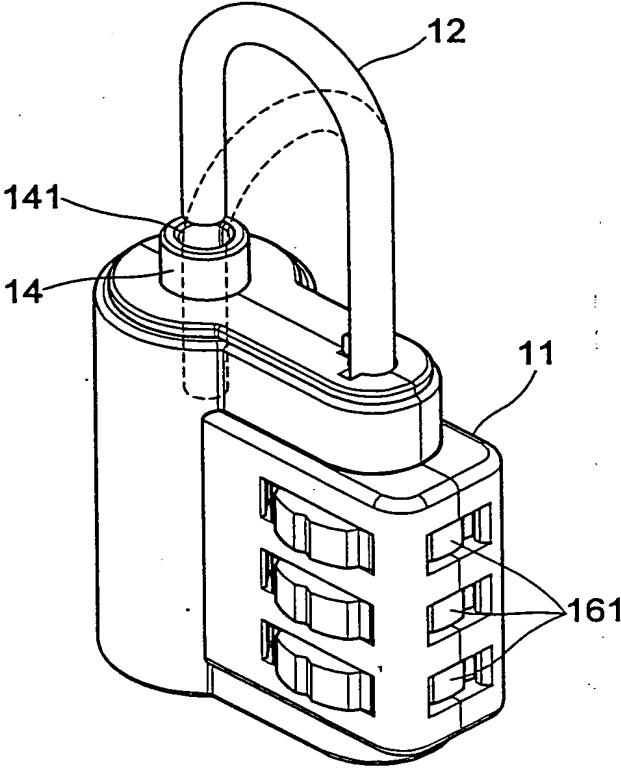
第11圖



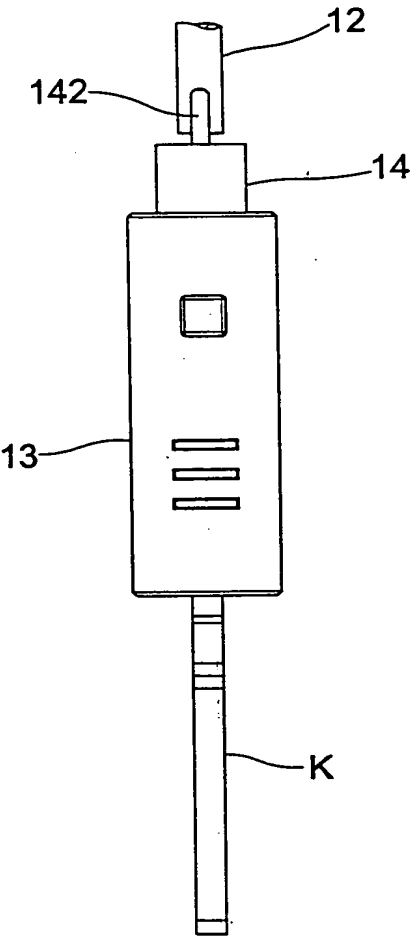
第12A圖



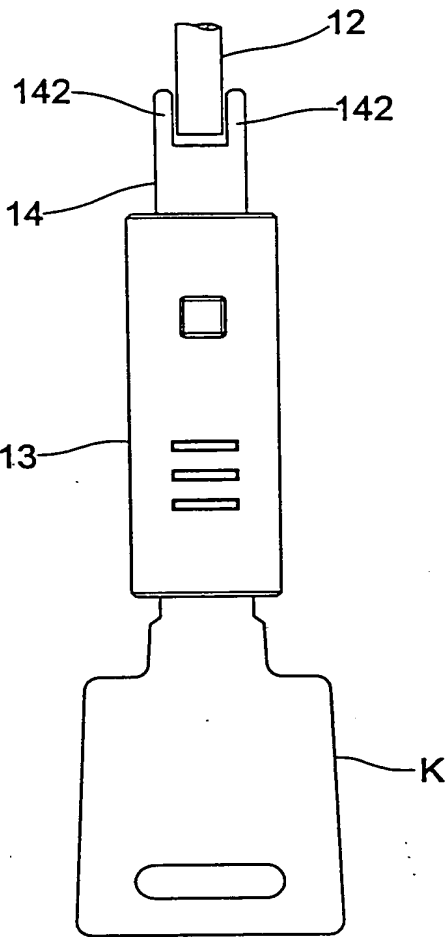
第12B圖



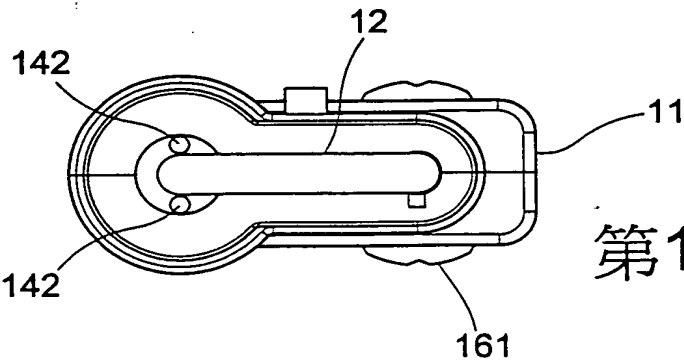
第13圖



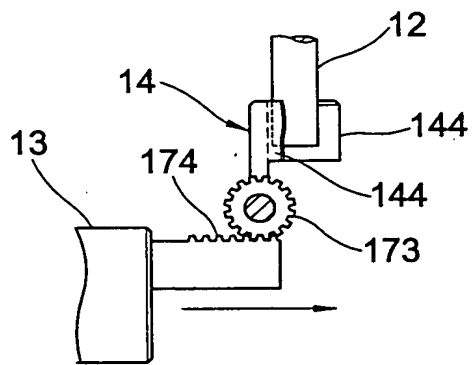
第14A圖



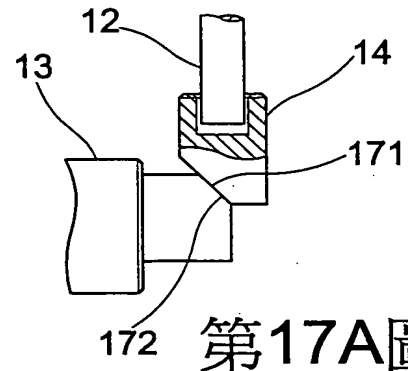
第14A圖



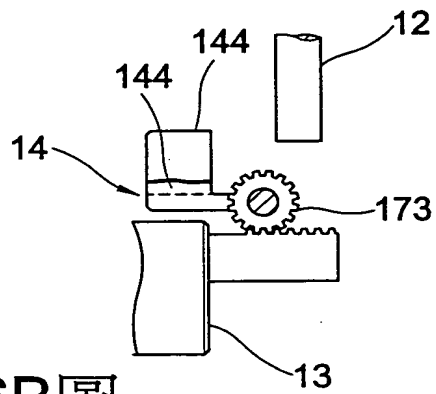
第15圖



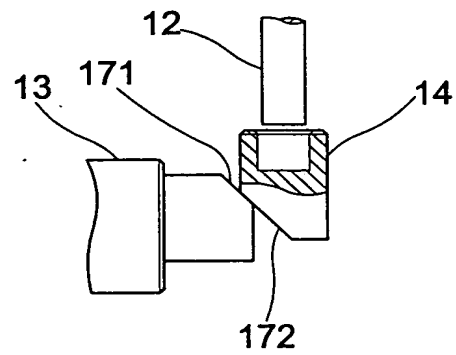
第16A圖



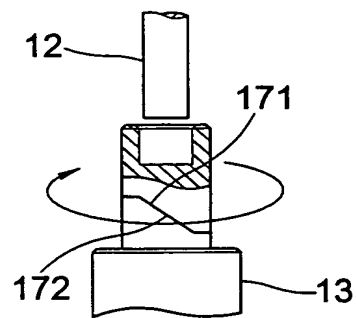
第17A圖



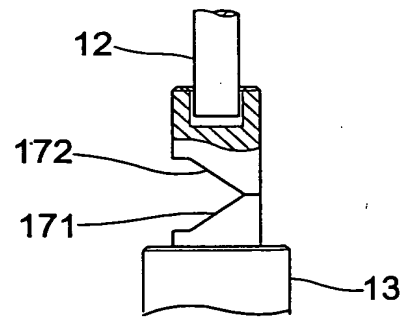
第16B圖



第17B圖



第18A圖



第18B圖